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THE DEVELOPMENT OF AN INSTRUMENT TO ANALYZE TEACHER BEHAVIOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

by

© Stuart G. Robbins

A THESIS

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ABSTRACT

During the past decade there has been an increased effort to describe more precisely what actually takes place in the classroom. The interplay between the teacher and pupils has been called interaction analysis. Before an analysis of teaching behavior can take place it is necessary to have a valid, objective and reliable observational instrument. To date in elementary school physical education there is, to the investigator's knowledge, no such instrument.

This study was designed to develop an observational instrument with which to analyze teacher behavior in elementary school physical education. An integral part of the study was to examine the validity of the instrument, to test its objectivity and reliability, and to describe ways of analyzing and displaying the data collected.

The instrument was based on Bellack's pedagogical moves and on the Flanders interaction analysis system. A preliminary instrument was developed from the literature and observation of physical education classes in the gymnasium. The instrument was sent to a panel of Canadian experts in the field of elementary school physical education for their assessment of content validity. The experts in general found the instrument to be valid. Minor adjustments were made, in accordance with their comments, to produce a

revised instrument.

Three observers were trained in the use of the revised instrument. In pair combinations they observed and coded the behaviors in three lessons of each of ten teachers. The coded categories were compared according to Scott's coefficient. It was concluded that the observational instrument reached a minimum acceptable level of objectivity with an average Scott's coefficient of .82 for live observation and .90 for video-taped lessons. The Scott's coefficient for intra-judge agreement averaged .92, showing the instrument to be reliable.

Although the data collected were from a limited, specific sample of teachers, the analysis and display of the data shows the potential of the observational instrument in enabling an analysis and comparison of teacher behavior in elementary school physical education.

ACKNOWLEDGEMENTS

A study of this nature is never the work of one person.

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TABLE OF CONTENTS

CHAPTER		PAGE
1	THE PROBLEM	1
	INTRODUCTION	1
	PURPOSE OF THE STUDY	5
	BACKGROUND AND SIGNIFICANCE OF THE STUDY	5
	DEFINITIONS	8
	LIMITATIONS OF THE STUDY	10
	DELIMITATIONS OF THE STUDY	11
2	THEORETICAL FRAMEWORK	13
	INTRODUCTION	13
	A MODEL OF TEACHER-PUPIL INTERACTION	14
	CONCEPTS OF CLASSIFICATION	17
	CHARACTERISTICS OF OBSERVATIONAL INSTRUMENTS	19
	Number of Categories	19
	Coding	20
	Methods of Obtaining Data	21
	Coding Units	22
	SUMMARY OF PERTINENT DECISIONS	24
	THE DEVELOPMENT OF CATEGORIES	24
	Educational Research in Interaction	24
	Physical Education Research in Interaction	28
	Elementary School Physical Education Literature Related to Teacher Behavior	32

CHAPTER PAGE

SUMMARY 39

3 THE DEVELOPMENT OF THE INSTRUMENT 40

INTRODUCTION 41

The Development of the Structuring Categories 45

The Development of the Soliciting Categories 45

The Development of the Response Categories . 46

The Development of the Reacting Categories . 46

The Development of the Silence or Confusion Categories 48

THE PRELIMINARY INSTRUMENT 48

THE VALIDITY OF THE INSTRUMENT 48

THE REVISED INSTRUMENT 51

4 TESTING THE INSTRUMENT 53

PROCEDURES 53

To Establish Objectivity 53

To Establish Reliability 56

STATISTICAL TREATMENT 58

RESULTS AND DISCUSSION 59

Objectivity or Inter-Judge Agreement 59

Inter-Judge Agreement Using Video-Taped Lessons 71

SUMMARY 72

CHAPTER PAGE

5 SUGGESTIONS FOR ANALYZING AND DISPLAYING DATA . 73

INTRODUCTION 73

DISCUSSION 74

SUMMARY 96

6 SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH 98

SUMMARY 98

CONCLUSIONS 100

SUGGESTIONS FOR FURTHER RESEARCH 101

* * *

REFERENCES 106

APPENDIX A. A SAMPLE OF A COLOR CODED SCRIPT 111

APPENDIX B. EXAMPLES OF STATEMENTS OR ACTIONS CATEGORIZED INTO FOUR AREAS 114

APPENDIX C. DESCRIPTION OF THE CATEGORIES IN THE PRELIMINARY INSTRUMENT 119

APPENDIX D. INTRODUCTORY LETTER TO PANEL OF EXPERTS 138

APPENDIX E. QUESTIONNAIRE TO THE PANEL OF EXPERTS 141

APPENDIX F. THE MANUAL FOR TRAINING OBSERVERS 144

APPENDIX G. EXAMPLE OF CATEGORIES RECORDED FROM TAPE 190

LIST OF TABLES

TABLE		PAGE
1	A Comparison of Characteristics of Teacher Behavior	29
2	The Similarities Between Cited Authorities (Physical Education	37
3	A Preliminary Observational Instrument	49
4	The Revised Observational Instrument	52
5	Pairing of Observers for each Lesson for each Teacher	55
6	Scott's Coefficient for Inter-Judge Agreement	59
7	Percentage Difference per Category per Lesson Between Observers	61
8	Sources of Error (Expressed as Percentage of Total Tallies for Each Lesson)	63
9	Sources of Disagreement Between Categories	66
10	Scott's Coefficient Between Pairs of Observers	69
11	Scott's Coefficient for Intra-Judge Agreement (Reliability)	70
12	Scott's Coefficient for Inter-Judge Agreement Using Video-Taped Lessons	71
13	The Total Tallies, Range and Average Percentages per Category for All Lessons, Games and Gymnastics Lessons	75

TABLE PAGE

14 The Percentage of Total Tallies per Category for All Lessons 76

15 The Percentage of Total Tallies - Games v Gymnastics 77

16 Average Percentage per Category per Teacher 80

17 A Comparison of the Percent of Tallies per Category - Teacher 10 Lesson 1 v Average 81

18 A Comparison of the Percentage of Total Tallies per Category for Each of the Three Lessons for Teacher 3 82

19 Percentage of Combined Categories per Lesson per Teacher 85

LIST OF FIGURES

FIGURE		PAGE
1	A Model of Schooling (Horowitz, 1971)	15
2	A Model to Illustrate the Interaction of Teacher and Learners with Respect to Content (Horowitz, 1971)	15
3	A Brief Model for Pupil-Teacher Interaction (Runkel, cited in Gage, 1963, p. 126)	16
4	A Brief Model for Pupil-Teacher Interaction (Runkel, cited in Gage, 1963, p. 126)	16
5	A Diagram to Show the Parts of the Elementary School Physical Education Curriculum	38
6	A Diagram to Show Areas of the Matrix into which Patterns of Behavior will Fall	87
7	A Matrix to Show Concentration of Tallies Round of Content Cross (Teacher 8 : Lesson 2 : Observer C)	89
8	A Matrix to Show Use of the Command-Response Cycle (Teacher 5 : Lesson 2 : Observer A)	90
9	A Matrix to Show Use of the Coaching Cycle (Teacher 10 : Lesson 2 : Observer B)	92
10	A Matrix to Show Use of the Question and Answer Dialogue (Teacher 6 : Lesson 1 : Observer B)	93

FIGURE PAGE

11 A Matrix to Show Use of the Praise and Criticism Cycles (Teacher 1 : Lesson 2 : Observer A) 94

12 A Matrix for Teacher No. 1 95

13 A Flow Chart to Show the Possible Cycles of Behavior for Teacher No. 1 97

CHAPTER 1

THE PROBLEM

INTRODUCTION

During the past decade there has been an increase in research designed to describe more precisely what actually takes place in the classroom.

> Prior to the 1960's, almost all research on 'effective teaching' concentrated on seeking links between characteristics of teachers or of teaching settings (input) and various kinds of pupil growth (output). Inclusion of process measures of teacher behavior in studies of teacher effectiveness has constituted a major change in research in this field. Data from these measures of what teachers and pupils 'do' in the classroom...has contributed both to encouraging research results and a feeling of cautious optimism among writers in the field about potential for building a viable theory of instruction with potential for implementation in practice (Simon and Boyer, 1970, A, Appendix p. 16-17).

Smith and Meux (1962) suggested that the initial approach to a new problem should be one of observation.

> If very little is known about a phenomenon, the way to begin an investigation of it is to observe and analyse the phenomenon itself. It must be observed, analysed, and classified into its various elements. Until the factors which are involved in the phenomenon are understood and described, there is little likelihood that

> significant correlational, predictive, or causal studies can be made. In other words, the state of knowledge about a given phenomenon dictates to some extent the kind of enquiry that is appropriate (1962, p. 8).

As early as 1904 Dewey recommended that a basic element in teacher training should be the observation of classroom behavior. This observation was not for the purpose of passing on the "tricks of the trade" but in order that the student-teacher might gain insight into the nature of teaching. Although some observation schedules appear in the literature of the early twentieth century, it has been mainly in the last decade that descriptive studies involving the observation of classroom teaching and the development of instruments of analysis have become prominent.

Piaget (1929, p. 2-4) suggests that there are three techniques for collecting data from children. Piaget's second technique is that of "pure" observation. Bellack (1963) and Kowatrakul (1959) concluded that research within actual classroom settings, with some degree of control, is an especially useful mode of investigation in the study of classroom teaching.

Researchers working in the field of classroom behaviors soon found that random, haphazard observation was of little value. They started, therefore, to develop systems for describing and analyzing classroom behaviors.

The purpose of these systems is to gain understanding of the special world of the classroom, rather than to identify the "good" teacher or "best" teaching methods.

Interaction analysis is a technique for capturing quantitative and qualitative dimensions of teacher behavior in the classroom. The systems do not attempt to measure all that occurs. Interaction analysis views the dynamics of classroom behavior through a particular lens. It is, of necessity, limited to certain features of the activities of teachers and of pupils in the classes under study. It is recognized that much additional research will be needed to round out the picture.

Numerous observational systems have been developed, each focussing on somewhat different aspects or looking at similar behaviors from a different standpoint. Bellack (1966) suggests that at this stage of knowledge, different approaches are valuable.

> To some extent the procedures chosen by different researchers to investigate the same general problem are a matter of personal taste or professional style. Indeed at the current stage of knowledge about the teaching process, a variety of widely different approaches to the same problem is probably desirable (p. 252).

Simon and Boyer (1970) reviewed and classified 79 observational systems. In doing this they had to omit many more instruments that were not considered appropriate for their purpose.

Interaction analysis has been used in many subject areas such as Art, Biology, Math, Science, Reading and Physics. Some researchers have compared the patterns of interaction in different subject areas (Furst and Amidon, 1967). In the area of elementary school physical education, however, there has been relatively little application of observational systems and the teaching process has not been extensively described. Some studies have been carried out by Fishman (1970), Bookhout (1965), and Barrett (1969).

According to Knapp and Leonhard (1968):

> Types of methods for physical education have not been so neatly categorized as those for general classroom use. Whereas each of the methods listed for classroom use has implications for physical education, neither singly nor as a whole do they translate directly for teaching physical education (p. 5).

They also see a need for more study of the physical education teaching process in the natural setting.

> Researchers of physical education teaching methods need to spend more time in classrooms, gymnasiums, and playgrounds and depend less upon research within the confines of laboratories which facilitate control of some variables but do not produce classroom situations (p. 10).

Existing observational instruments are not adequate to the task of accounting for the many crucial events in elementary school physical education. Barrett (1969) attempted to discover the teacher techniques involved in problem-solving in elementary school physical education. Her conclusions were limited by the fact that the obser-

vational instrument which she developed did not meet reasonable levels of observer objectivity and reliability.

In order to carry out further research into teacher-pupil interaction in elementary school physical education it is imperative to develop a valid, objective, and reliable instrument.

PURPOSE OF THE STUDY

It was the purpose of this study to develop an observational instrument to describe and analyze teacher behavior in elementary school physical education. Further to this general purpose was the need to test the instrument for validity, to determine procedures for training observers, and to establish ground rules for observation. Since the usefulness of the instrument was also a matter of consideration, recommendations were made to suggest ways of analyzing and displaying data collected using the instrument.

BACKGROUND AND SIGNIFICANCE OF THE STUDY

Significant changes have taken place in the teaching of elementary school physical education during

the past ten years. The drill, calisthenic and agility programs have been replaced by programs more in keeping with the individual development of children. These programs, in which a variety of teaching methods are used, are more informal and more individual.

Emphasis has been placed in recent years on the relationship between cognitive development and development in the psychomotor domain. This has served to give impetus to physical education programs.

Current elementary school physical education curricula (Alberta, 1969; Manitoba, 1969; Ontario, 1967) emphasize that the teacher is of great importance in developing lessons, setting tasks, motivating better performances and encouraging a variety of responses. As yet, however, there is very little written about what goes on between teacher and pupil in elementary school physical education. Most "methods" books devote a great deal of space to the organization of students and to the planning of instruction but merely glance over the important aspect of teaching behaviors.

There is, therefore, because of the increasing emphasis on elementary school physical education and the increasing importance of teaching methods within this field, a need to describe more accurately what goes on in elementary school physical education, and in particular to describe the interaction between teacher and pupils.

Before lessons can be intelligently observed it is necessary to have a valid, reliable and objective instrument. This study proposes to develop such an instrument and should serve as a starting point for the accumulation of more knowledge of elementary school physical education teaching behaviors.

Anderson (1971) considered five stages in his analysis of interaction analysis in physical education. The first stage is the development of systems which adequately describe events in physical education lessons. The second stage would involve using the systems to acquire large samples of descriptive data which describe what is happening in physical education. Thirdly, the descriptive systems might be used to examine the nature of existing and innovative methods. A subsequent stage would involve using the instruments and the results of descriptive studies as a basis for conducting experimental and evaluative studies. A continuous and concurrent stage of this research effort would involve the utilization of the accumulating body of information to enrich teacher education programs. Teacher educators might use descriptive systems to record the change in performance of beginning teachers in relationship to their exposure to specific training programs.

Anderson contends that physical educators are at stage one - the development of descriptive systems: hence,

the timeliness of this study.

Existing descriptive systems were developed to describe events in the academic classroom. Evidence indicates that these systems are not adequate to the task of accounting for many crucial events in the gymnasium, the swimming pool, or the games field. It appears that specialized instruments will have to be developed to describe adequately events in physical education.

If a valid, reliable and objective observational system can be developed and the means of analyzing and displaying the results suggested, it could lead to many further studies relating to the teaching-learning process in elementary school physical education.

DEFINITIONS

A number of terms used in this study have specific meaning and are defined as follows:

1. Elementary School Physical Education. This term includes a program of physical activities for grade one through grade six.
2. Pedagogical Moves. Bellack et al. (1966) have used this term to describe the "basic unit of discourse". Bellack classified four

pedagogical moves: structuring, soliciting, responding, and reacting.

3. Structuring. "Structuring moves serve the function of setting the context for subsequent behavior..." (Bellack et al., 1966, p. 16).
4. Soliciting. Soliciting behavior is intended to elicit a response from other persons.
5. Responding. Responding behavior occurs as a response to soliciting behavior.
6. Reacting. This term relates to a reply to the responding move. These moves serve to modify and/or rate responding moves.
7. Setting Tasks. This term is used in teaching physical education and refers to the soliciting move of the teacher designed to elicit a response.
8. Coaching. This term is used in physical education to signify the reacting moves of the teacher.
9. Subscripting. This term is used to describe a process of subdividing existing categories of an observational instrument to describe observed behaviors more specifically.

10. Interaction. This term refers to a relationship between persons such that "the behavior of one is stimulus to the behavior of the other" (English and English, 1958, p. 270: in Withall and Lewis, 1963, p. 682.).

11. Frame of Reference Filter. Frame of reference filter in this study is the perspective through which a person receives stimuli. This is dependent on the total background of that person. Two people can see the same thing but, because of their different backgrounds perceive the incident in different ways.

LIMITATIONS OF THE STUDY

A number of limitations of the study were recognized:

1. The study was limited to the development of a valid, reliable, objective instrument. A description of observed teaching behavior in elementary school physical education is limited to the section describing and recommending ways of analyzing and displaying data.

2. The instrument does not attempt to describe

all of the teaching processes in elementary school physical education. It provides information on some aspects of the teacher-pupil interaction.

3. No attempt was made to obtain a representative, random sample of teaching behavior. An opportunistic sample was used.

4. The presence of observers in the gymnasium may well affect the teacher-pupil interaction.

DELIMITATIONS OF THE STUDY

Although it would be useful to develop an instrument with which to observe all aspects of elementary school physical education it was considered that such an undertaking would result in an instrument that would be too general and unwieldy. Many of the key teacher behaviors would be lost by the use of such a general observational instrument. Several ways of subdividing elementary school physical education were considered. Current texts divide elementary school physical education into areas such as dance, games, gymnastics, skating, swimming, and track and field. However, many of the curriculum guides (Alberta, 1969; Manitoba, 1969; and British Columbia, 1971) do not differentiate between the teaching methods used in each of these areas. It was decided, therefore, that another means

of delimiting the study was according to the environment, namely, the gymnasium, playing field, swimming pool or skating rink. The study focussed on the development of an observational instrument to describe teacher behavior in the gymnasium.

The study concentrated on the observation of behaviors of teachers who had been suggested by the assistant supervisor of physical education in the Edmonton Public School Board. It was delimited further to the observation of teachers who were teaching grades four, five and six.

CHAPTER 2

THEORETICAL FRAMEWORK

INTRODUCTION

This chapter will present the underlying theoretical background necessary for the development of the observational instrument. A model of teacher-pupil interaction is adopted and forms the basic framework for the study. General concepts of classification illustrate the essential ingredients of an observational system. The review of the literature pertaining to studies in interaction analysis is divided into three sections. The first section examines characteristics of current observational instruments. These serve to indicate the form that an instrument with which to analyze teacher behavior in elementary school physical education could take. The second section draws together interaction analysis studies relating to the analysis of teacher behavior. The third section is devoted to the studies in physical education using interaction analysis. It also serves to illustrate the paucity of research relating

to interaction in elementary school physical education. Finally, contemporary elementary school physical education literature relating to teacher behavior and teaching methods is reviewed.

It should be noted that this chapter is not intended to be an exhaustive review of literature in the area of interaction analysis. Although many of the studies were read, and may have affected the thoughts of the writer, only those studies that were considered immediately relevant are included.

A MODEL OF TEACHER-PUPIL INTERACTION

To set a general frame of reference for this study, a general model of interaction was adopted. Horowitz (1971) has analyzed schooling into four basic components: the learner, the teacher, content and environment. See Figures 1 and 2.

This study focussed on the interaction of the teacher and learners with respect to the content of elementary school physical education. In particular, the study developed an instrument to analyze and observe teacher behavior.

The question may well be asked: what goes on along the line between the teacher and the learners? In

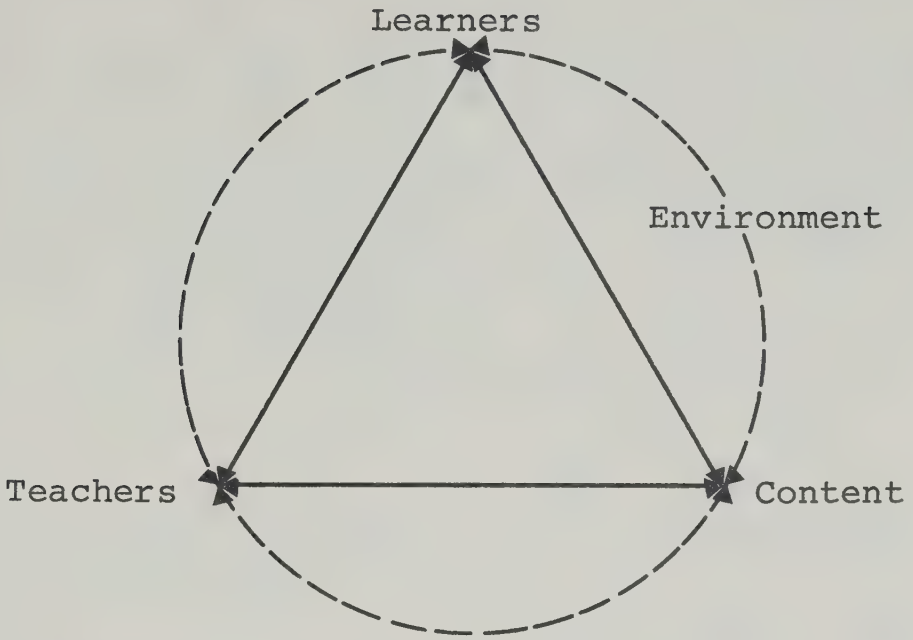

Fig. 1

A Model of Schooling (Horowitz, 1971)

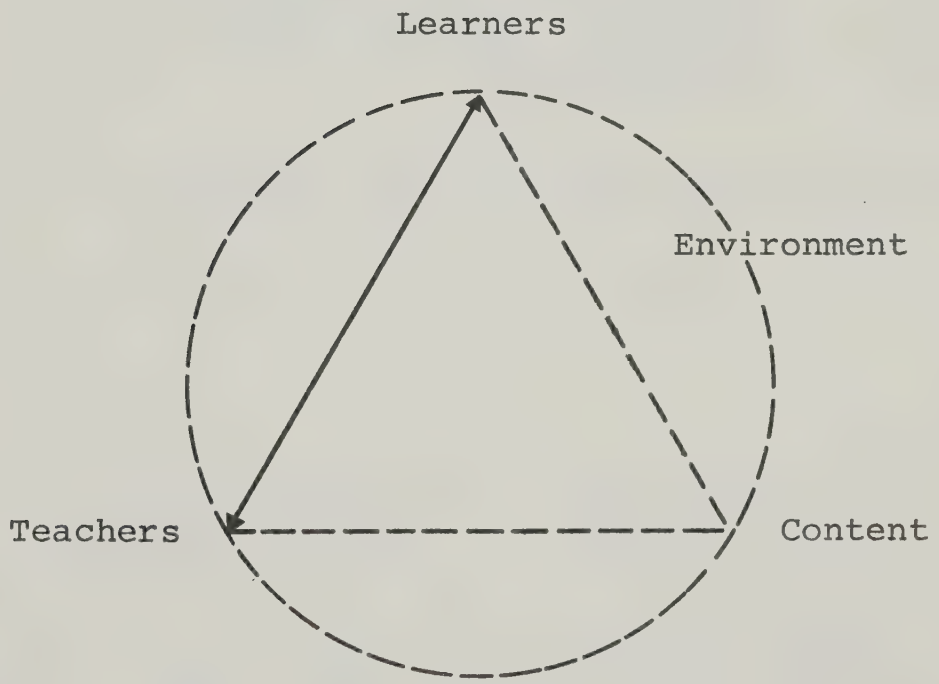

Fig. 2

A Model to Illustrate the Interaction of Teacher and Learners with Respect to Content (Horowitz, 1971)

order to discuss this Runkel's (cited in Gage, 1963, p. 126) brief model of interaction was chosen. See Figures 3 and 4.

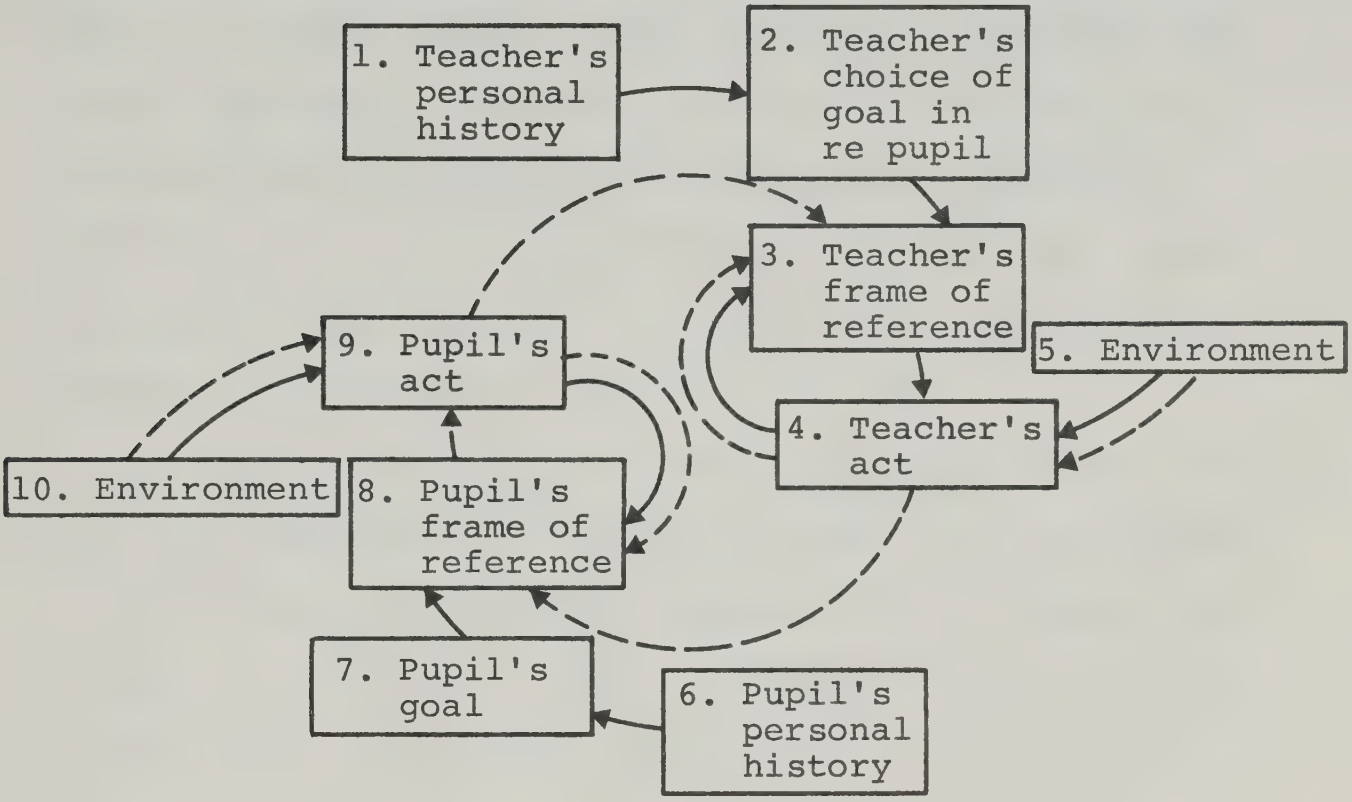

Fig. 3

A Brief Model for Pupil-Teacher Interaction

(Runkel, cited in Gage, 1963, p. 126)

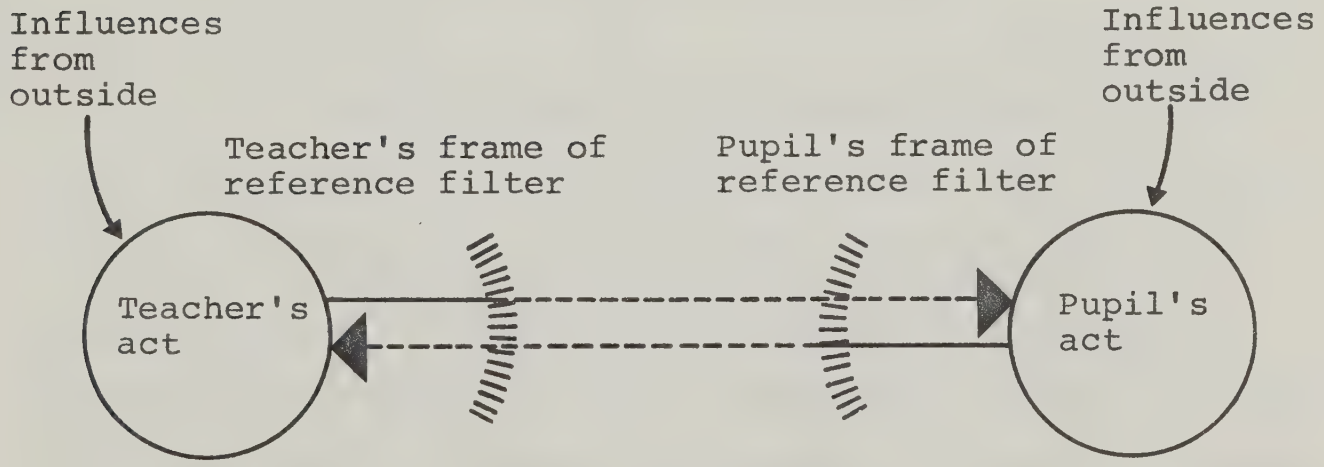

Fig. 4

A Brief Model for Pupil-Teacher Interaction

(Runkel, cited in Gage, 1963, p. 126)

The instrument concentrated on the overt teacher behavior or "teacher acts" but as Runkel's models demonstrate the teacher's behavior is somewhat dependent on the pupils' behavior. Therefore, the model included aspects of pupil behavior that had an effect on the teacher's behavior. It is also noted that the teacher's act passes through the pupil's frame of reference filter and may be perceived by each pupil in a different way.

Although the background, training, values, and previous experiences of both the teacher and the learners are recognized as important dimensions of the interaction process, no attempt was made to describe these dimensions in this study. The study concentrated on what occurs in the gymnasium.

CONCEPTS OF CLASSIFICATION

"Classification, in its simplest form, is the putting together of like things (Glassford, 1970, p. 73)." In the context of the present study, teacher-pupil behaviors must be isolated into classes or categories. Classification schemes reflect the position of the researcher and are seldom permanent. According to Sayers, "classification... is not only the general grouping of things; it is also their <u>arrangement</u> in some sort of logical order so

that the relationships of things may be ascertained (1944, p. 5)." Glassford states "... the essential aspect of classification is that it permits the arrangement of the 'things' in question into a schema, and this schema in turn provides us with a meaningful mental image or map of the total situation (1970, p. 75)." Glassford, after reviewing the writings of several noted authors, lists the following criteria of a "good" classification system:

1. Exclusiveness. Each class should be mutually exclusive with any other class at the same level of analysis. What goes into one class should, must, be thereby excluded from the others. No two characteristics should be concomitant.

2. Exhaustiveness. Any given set of classes should be totally exhaustive of their field. If "things" under consideration cannot be classified into one of the given classes there is danger that the system is inherently inadequate.

3. Differentiation. Each characteristic should be an attribute that differentiates at least two classes.

4. Ascertainability. Every characteristic in a classification scheme must be easily ascertainable by any user. This criterion is related to the one below.

5. Unambiguity (meaningful terminology). The terms used in a scheme should, whenever possible, be those in current use among individuals who specialize in the field. The meaning of each term should be carefully defined so that the problem of ambiguity is minimized.

6. Relevance. All characteristics chosen should be relevant to the purpose of the classification.

7. Exactness. Each stage of classification should be carried out in as minute detail as possible. The dividing process must be gradual such that the smallest amount of difference possible is used at each stage or level of differentiation.

8. Usefulness. The obvious measure of a "good" classification system is the extent to which it is used by scholars, students and others who are familiar with the field of knowledge for which the classification scheme was devised (p. 77-78).

Although classification is not an exact science, adherence to the eight criteria assisted in the development of a more standardized instrument with which to record teacher behaviors in elementary school physical education.

CHARACTERISTICS OF OBSERVATIONAL INSTRUMENTS

Flanders (1966) stated that a set of categories, a procedure for observation, a set of ground rules for observation, steps for tabulating data and suggestions which can be followed in application of the instrument are necessary in order to observe and record interaction.

Number of Categories

As the number of categories increases the amount of detailed information increases as well, and the instrument becomes increasingly difficult to administer. As the number of categories decreases the facility and

reliability of administration is improved, but the amount of information preserved decreases. In developing an observational instrument it is necessary to find a compromise between the number of categories used and the amount of information preserved.

Flanders (1966) used a 10 category system whereas the Verbal Interaction Category System of Amidon and Hunter (1966) used 17 categories successfully. Browne (1971) developed a system using 16 categories. Category systems have been developed using 30 or more categories. These systems appear to be too unwieldy for general use unless they are based on a check list approach, rely on expert observers, use audio or video tapes which can be replayed many times, or use duplicated categories.

Coding

A great variety of methods of coding can be found in the literature. Flanders (1966) used a number system. Gallagher (1967) used a three digit number system in which each numeral represented a different dimension. Bellack et al. (1966) and Taba, Levine, and Elzey (1964) used a number to represent another dimension. The Aschner-Gallagher (Simon and Boyer, Vol. A, 1970, No. 3) and Simon-Agazarian (1967) SAVI Systems used mnemonic abbreviations while Hall (Simon and Boyer, Vol. B, 1970, No. 45) made use of an iconic code.

It is important that the coding system is as simple as possible and is easy to learn and use. The

coding of behaviors should be possible without reference to a chart, otherwise important behaviors may be missed, if the observational instrument is to be used for live observation.

Methods of Obtaining Data

Audio recordings of classroom interaction have been used in many studies in which verbal interaction was considered to be an accurate record of the total interaction taking place. The advantage of this method is that a permanent record of the interaction is obtained from which transcripts can be made.

It was considered that verbal interaction is not an accurate record of the total interaction process in elementary school physical education. Nonverbal dimensions play an important part in the interaction.

Video-recordings have been used but the majority of studies focussed on individual children or small groups of pupils. It would seem difficult to keep the whole of a class in the picture and in focus especially in the free moving, changing environment of a gymnasium. Biddle (1967) found that quality sound recordings are difficult to obtain in a classroom. This difficulty is magnified in accoustically poor physical education facilities.

Live observation has been used in other studies. Although this method has the disadvantage of the need for immediate coding with no possibility of replay, it has the

advantage of using the natural setting and, because it is independent of technology, can be used anywhere and by anyone.

Coding Units

An investigator must make decisions as to the units of analysis that will be used in observation. It is impossible to record everything that takes place in the teaching environment. Various investigators have approached the problem in different ways.

Mussen (1960) suggests that the observer's attention can be focussed on a few students at one particular time or attention can be focussed on each child for a given period of time. This is a technique that was used by Barrett (1969). In order to obtain a record of the total interaction taking place, however, it is necessary to observe the teacher and the majority of the class.

The Adams-Biddle (1970) system of observation uses a change in speaker as the unit of analysis, while the instrument developed by Gallagher (1970) depends on a change of topic or content.

Lindvall (cited in Simon and Boyer, Vol. A, 1970, No. 12), Spaulding (cited in Simon and Boyer, Vol. A, 1970, Nos. 21-22) and Kowatrakul (1959) analyzed behavior for a particular time sample of the lesson. The difficulty

of this method of coding is that behaviors are likely to change significantly during a lesson and, therefore, a time sample will not represent the total interaction adequately.

Simon and Boyer (1970) found, in their analysis of 79 systems of interaction observational instruments, that the majority of investigators use a category change, sometimes in conjunction with other coding units, to initiate further encoding. Category change alone as the coding unit has the disadvantage of failing to provide any concept of elapsed time. It does, however, preserve all the significant changes in behaviors.

Other investigators (Flanders, 1970; Joyce, 1967) have used a time unit as the unit of analysis. If an accurate account is to be recorded of a fast moving lesson it will be necessary to use a short time unit. Flanders (1970) recommends using a three second time unit. Previously (1966) he recommended that an observer would record at a change in category or every three seconds if the category had not changed. Notations using time units carry with them a sense of elapsed time as well as a record of category changes. "... category change/time unit has made possible research data about the sequential nature of the amount and kinds of verbal transactions that go on in classrooms (Simon and Boyer, 1970, A, p. 15)."

SUMMARY OF PERTINENT DECISIONS

After reviewing the coding systems used by many other investigators certain decisions were made with respect to the type of instrument to be developed in the study.

Although video-recordings were explored during the preliminary work, because of the difficulties in suitable reproduction, live observation was used to test the instrument. An attempt was made to limit the observational instrument to between 15 and 20 categories. A simple number coding system was used. Rather than focussing on individual children or on groups of children, the observation was made of the whole class as related to the behavior of the teacher. This possibly had an effect on the observer reliability. In order to test the reliability and objectivity of the instrument it was decided to record categories at changes in behavior. If a time factor was deemed necessary for particular studies it could be added at a future date. The instrument was designed to describe aspects of both verbal and nonverbal behavior.

THE DEVELOPMENT OF CATEGORIES

Educational Research in Interaction

According to Kliebard, "Probably the most critical

decision is that of determining the range of behaviors that will be observed. Observing everything that happens in a classroom is an obviously futile task (Kliebard, 1966, p. 46)".

Flanders (1960) developed his observational system to analyze the direct/indirect influences within the classroom as indicated by the verbal interaction between the teacher and the students. The basic structure of the Flanders category system would seem most useful. Although these categories have been criticized as being narrow in outlook and gross in their measures, they do provide a point of departure.

Galloway (1968) related a nonverbal dimension to the Flanders system in "an attempt to describe the nonverbal cues that are associated with verbal messages (Simon and Boyer, 1970, B, p. 44)". This suggests a need, particularly in physical education, to include nonverbal dimensions within the category definitions.

Smith's (1962) categories look at teacher behavior in lessons. The categories used are as follows:

1. Defining
2. Describing
3. Designating
4. Stating
5. Reporting
6. Substituting

7. Evaluating
8. Opining
9. Classifying
10. Comparing and contrasting
11. Conditional inferring
12. Explaining
13. Directing and managing a classroom.

Parsons' (1968) Guided Self-Analysis focusses on the teaching process. His system is composed of six categories, each with its own sub-system. The six categories are:

1. Questioning strategies
2. Response patterns
3. Teacher talk patterns
4. Teacher-pupil talk patterns
5. Experience referents
6. Levels of thinking.

An example of one of Parsons' sub-systems is for category two which is composed of four types of responses:

1. Closure
2. Verbal reward
3. Sustaining
4. Extending

"Parsons' rationale of dividing the instructional concerns into small, manageable schedules, so that the

teacher can concentrate on one function at a time, supports the point that no one system can completely reveal what happens in a classroom (Ober, Bentley, and Miller, 1971, p. 27)."

Ober et al. (1971) developed a Reciprocal Category System to direct more attention to the student talk that occurs in a lesson.

Ober's Categories (1971, p. 37) are:

Teacher Categories		Student Categories
1	"Warms" (informalizes) the climate	11
2	Accepts	12
3	Amplifies the contributions of another	13
4	Elicits	14
5	Responds	15
6	Initiates	16
7	Directs	17
8	Corrects	18
9	"Cools" (formalizes) the climate	19
10	Silence or confusion	20

Ryans (1960), basing his work on information theory, suggests five major categories into which teacher behaviors fall:

1. Motivating-reinforcing teacher behavior

2. Presenting-explaining-demonstrating teacher behavior
3. Organizing-planning-managing teacher behavior
4. Evaluating teacher behavior
5. Counseling-advising teacher behavior

Bellack et al. (1966) analyzed a great number of recordings of classroom interaction and classified teacher behavior into four pedagogical moves:

1. Structuring - focussing on content or management and procedures
2. Soliciting - questions, demands or requests designed to elicit a verbal or nonverbal response
3. Responding - a response to a soliciting move
4. Reacting - a move to modify the response or to evaluate it

It is noticeable that certain characteristics seem to occur in those systems designed to analyze teaching behavior (Table 1).

Physical Education Research in Interaction

Bookhout (1965) used a modified version of the OSCAR system to help to determine the relationship between patterns of teacher behavior and the social-emotional climate in physical education classes. She developed a 50 category check list instrument. Categories were recorded in cycles of three minutes recording followed by three

TABLE 1.

A Comparison of Characteristics of Teacher Behavior

Bellack	Ryans	Ober et al.	Smith
1. Structuring	3. Organizing-planning -managing	Warms Cools	Stating Opining Describing
2. Soliciting	2. Presenting-explaining -demonstrating	Initiates Directs Elicits	Explaining Directing Designating
3. Response			
4. Reacting	1. Motivating-reinforcing 4. Evaluating	Corrects Amplifies Accepts	Evaluating Classifying Comparing and contrasting

minutes rest.

Deelman (1968) listed seven categories of student response:

0. Ignores
1. Observes others but reveals no active response
2. Listens to the task and makes verbal suggestions but makes no active response
3. Responds actively but not consistently
4. Responds actively - attempts to fulfill task but shows no variety
5. Responds actively - stays within the task and finds a variety of answers
6. Responds actively - stays within the task, finds a variety of answers and obviously enjoys participating

Barrett (1969) developed a system to analyze and describe teacher-pupil behavior in physical education using a problem-solving approach. Her system contains the four major dimensions: movement tasks, student response, content, guidance.

Movement Task

1. Command
2. Guided Discovery
3. Selected Response

Movement Task (continued)

4. Specific Limitation a) find a way
   b) find a different way
5. Non-Specific Limitation a) implied variety
   b) continuous variety
6. Free Exploration

Student Response

Barrett collapsed Deelman's seven categories into five categories for her study:

1. Unaware of the situation
2. Aware of the situation
3. Responding inappropriately
4. Responding appropriately but inconsistently
5. Responding appropriately and willingly

Content

Barrett's content categories were based on Laban's analysis of movement. This analysis relates to the concepts of time, weight, space and flow and their inter-relationship to body actions, travelling or balancing, and relationships.

Guidance

1. Focussing
2. Questioning
3. Accepting
4. Rejecting

5. Organizing

6. Unrelated

Barrett observed three children, one at a time, in five minute cycles using video-taped lessons. She concluded that there was low inter-judge agreement which limited the usefulness of her instrument. She stated that insufficient training of observers, the complexity of the recording system, the unequal opportunity for the quantity of observations and inadequate definitions may have been contributing factors in the low reliability coefficients recorded for some dimensions.

Fishman (1970) concentrated on the augmented feedback provided by teachers in physical education classes. The categories, for the study, were developed from a review of the research that had been carried out on feedback and from observation of a number of physical education teachers. The final instrument was made up of six categories with a total of twenty sub-categories. Fishman suggests that the system may be too complex to use in its entirety in live situations. The system can be used with a permanent record of the lesson or in a modified form in the live situation using one or two categories.

Elementary School Physical Education Literature Related to Teacher Behavior

Although many books have been written on teaching elementary school physical education, very little attention

is devoted to teacher behavior. The majority of the space refers to organizational patterns, dress, planning, control, etc.

Bilbrough and Jones (1963) suggest that the behavior of the teacher should be flexible and should be appropriate to the situation. They describe the teaching methods as direct, indirect and limitation methods of presentation. The teacher should be able to move from one method of presentation to another.

> The method of presentation employed is determined by the amount of choice allowed to the children. When there is 100 per cent limitation and the choice of activity or movement is entirely that of the teacher, the teaching method employed is known as the "Direct" method. When the choice of activity is left entirely to the children, and the only limitation imposed upon them is that of the apparatus being used, then the teaching method employed is known as the "Indirect" method.
>
> When the choice of activity or movement is limited by the teacher by some factor other than that of the apparatus, then the teaching method employed is known as the "Limitation" method. This is really a combination of the Direct and Indirect Methods (1963, p. 30).

Recent elementary school physical education curriculum guides (Alberta, 1969 and Manitoba, 1969) concur with the description of methods used by Bilbrough and Jones.

The teacher must urge and assist the students to modify, clarify and consolidate their early responses in order to develop more variety and better quality of skills.

This teacher behavior Bilbrough and Jones call coaching.

> The term "coaching" is being used more and more in relation to the technique of teaching in the Physical Education lesson where "coaching" as such has to a very great extent replaced "instruction". The word has developed a fuller meaning in that we now include in our technique of coaching all those many opportunities for guidance, help, encouragement, stimulation to greater effort, improvement in performance and greater variety which occur during every lesson (1963, p. 43).

They describe six different kinds of coaching:

1. General coaching during practice
2. Individual coaching during practice
3. General coaching following practice
4. Coaching by question and answer
5. Coaching by demonstration only
6. Coaching by demonstration and observation

Tillotson and staff (1968) describe five methods of teaching. These relate to the amount of teacher/child control.

> "Free Exploration: implies that children are free to move without restriction or guidance from the teacher (1968, p. 8)."
>
> "Guided Exploration: implies certain restrictions and controls are established by the teacher and the pupils (1968, p. 8)."
>
> "Problem Solving: presenting problem-solving situations to children helps them to refine movement patterns in order to gain proficiency in skills, still on an individual basis (1968, p. 8)."
>
> "Task: less open-ended and require children to perform specific activities sometimes in their

> own way, but with more direction from the teacher (1968, p. 8)."
>
> "Command: allows for no individualization. Children are told what to do and how to do it (1968, p. 8)."

A spectrum of seven styles are described by Mosston (1966). These styles are on a continuum with teacher control at one end of the continuum and child control at the other. Mosston's seven styles are:

1. Command: the teacher makes all the decisions
2. Task: the role of the teacher is the same but once the desired physical performance is explained and demonstrated the students start and stop on their own
3. Reciprocal teaching (working in pairs): the role of the teacher in evaluation is the major change. The teacher entrusts the partner with the observation and coaching of the skill while still maintaining the responsibility to set the stands
4. Use of the small group: the students are in small groups rather than pairs
5. The individual program: the subject matter is organized so that the student can work on his own. Self-evaluation is important.
6. Guided discovery: the teacher attempts to present the subject matter in a way that will

encourage the students to use the cognitive domain. The teacher creates "cognitive dissenance" which will induce "inquiry" which in turn will lead to "discovery"

7. Problem-solving: the teacher encourages the students to develop the answers to the problems on their own.

Stanley (1969) refers to three common teaching -learning procedures. The first is learning as a response to command; the second is learning by demonstration, explanation and practice; and finally, learning by the discovery process.

Schurr (1967) refers to the traditional method, the problem-solving method and the exploratory method of teaching.

Kirchner (1966) describes a teaching cycle consisting of explanation, demonstration, practice and analysis.

It is evident that there are similarities among the authorities cited. A technique must be used to initiate activity on the part of the students which is followed by "coaching" by the teacher. The initiating or soliciting technique may be classified according to the degree of control and direction exerted by the teacher (Table 2).

The elementary school physical education literature (Alberta, 1969; Manitoba, 1969; Stanley, 1969) suggests three

TABLE 2

The Similarities Between Cited Authorities
(Physical Education)

Bellack (1966)	Bilbrough & Jones (1963)	Tillotson & Staff (1968)	Mosston (1966)	Stanley (1969)	Schurr (1967)	Kirchner (1966)
Structuring				Explanation		Explanation
Soliciting	1 Direct	1 Command	1 Command 2 Task 3 Reciprocal teaching	1 Command 2 Demonstration	1 Traditional method	Demonstration
	2 Limitation	2 Task	4 Small group 5 Individual program			
		3 Guided exploration	6 Guided discovery	3 Guided invention		
		4 Problem solving	7 Problem solving		2 Problem solving method	
	3 Indirect	5 Free exploration		4 Discovery	3 Exploratory method	
Response				Practice		Practice
Reaction	"Coaching" 1 During practice 2 Following practice 3 Question and answer 4 Demonstration 5 Demonstration and observation					Analysis

main parts of a good elementary school physical education program. These parts are games, gymnastics and dance. Activities such as track and field, swimming and skating should be included if time and facilities permit. (Fig. 5).

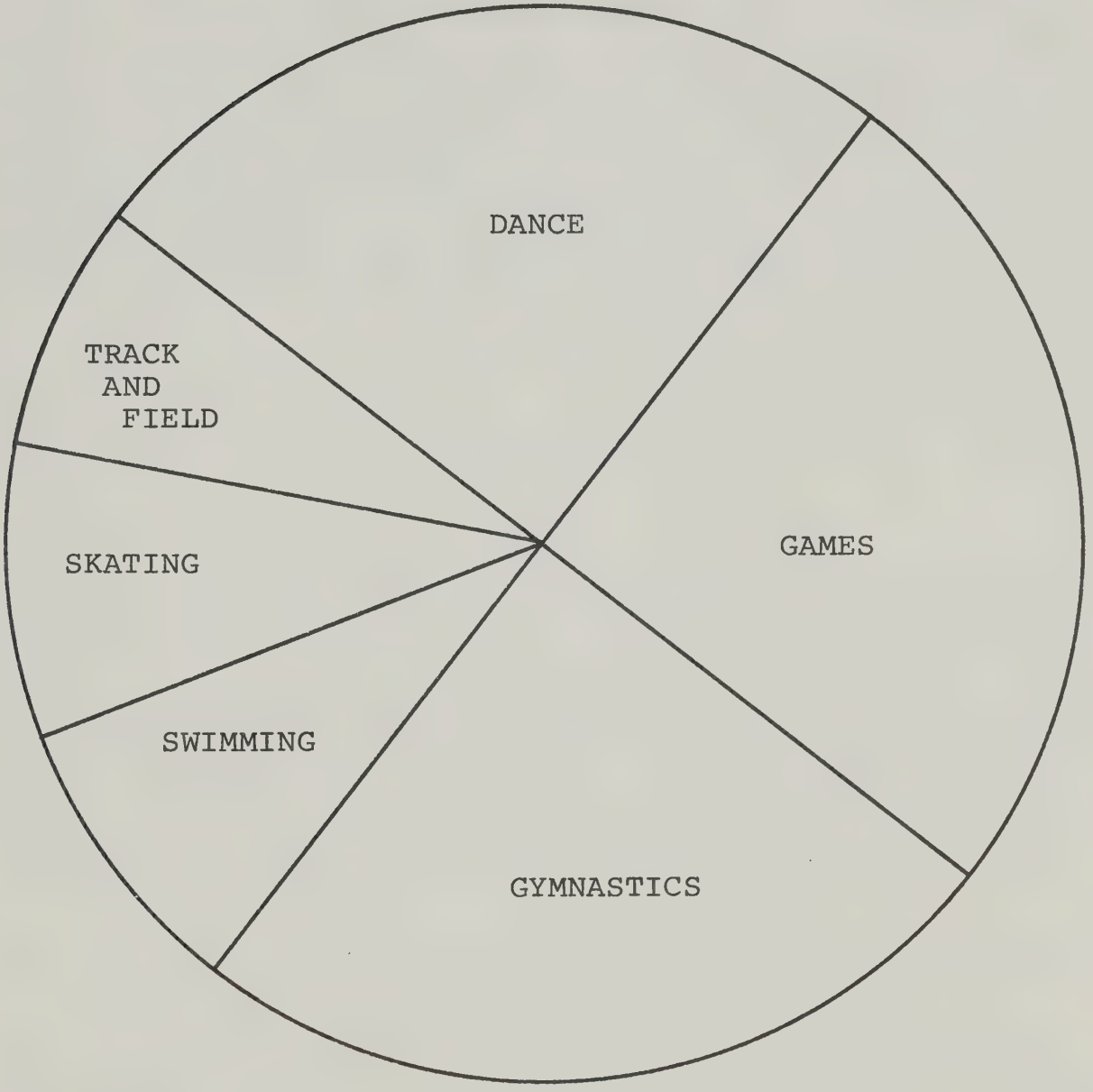

Fig. 5

A Diagram to Show the Parts of the Elementary School Physical Education Curriculum

Research and literature on elementary school physical education do not differentiate particular teacher-pupil behavior for each part of the program outside of the actual content. It is assumed that methods of teaching and the types of responses by the pupil are the same for all areas. Although these methods may be used in different ways, in different cycles and to different extents only the actual content is different. The instrument, therefore, was designed for observing and analyzing dance, games and gymnastics within the environment of the gymnasium.

SUMMARY

In this chapter the theoretical background for the study has been discussed. The literature explored formed the basis on which decisions were made for the development of the observational instrument. The development of the instrument is described in the following chapter.

CHAPTER 3

THE DEVELOPMENT OF THE INSTRUMENT

INTRODUCTION

The review of the literature tended to indicate that Bellack's characteristics of teaching could serve as a basic framework for the development of the instrument in this study. The terms structuring, soliciting, reacting, and response served to break the behaviors, occurring in elementary school physical education, into meaningful areas.

In order to explore the use of Bellack's pedagogical moves in elementary school physical education the investigator analyzed several elementary school physical education lessons. Scripts were made of nine elementary school physical education lessons. It was acknowledged that this was reducing the lessons to only verbal behavior but at this stage this was not considered as a serious drawback since live observation could take place at a later time. Each of Bellack's pedagogical moves was given a color code. The investigator examined the scripts and color coded the phrases where possible. (See Appendix A.).

It was found that with a slight amount of distortion of Bellack's terms and with the addition of a silence or confusion area all statements could be accounted for in the script.

Live observation was then carried out, using Bellack's four pedagogical moves and a silence or confusion area as a basis for the observation.

It was concluded from the analysis of the scripts and from the live observation that structuring moves by the teacher, soliciting moves by the teacher, response by the pupils, reaction by the teacher, and silence and confusion could form the basic framework for the observational instrument. It was equally evident that each of these was too gross to form the actual categories to be used in the instrument.

The next stage in the development of the instrument was to collect together all the statements or actions that had been coded into the five areas. In this way five lists were made. An example of the lists may be found in Appendix B.

The items in the lists were studied in the light of the literature reviewed in the previous chapter and similarities and differences noted. Each of the five areas was therefore subdivided into smaller more specific divisions as discussed below:

Structuring

1. Introducing
2. Organizing
3. Planning
4. Explaining
5. Lecturing
6. Describing
7. Summarizing

These behaviors could relate to the physical education lesson or relate to the general everyday administration of the class or school.

Soliciting

1. Direct command
2. Narrow limitation
   - Guiding
   - Leading to solve problem
3. Wide limitation
4. Indirect or Free
5. Teacher questioning
   - Verbal answer
   - Physical answer

It was clear that the tasks set by the teacher restricted or enlarged the activities of the children.

Response

1. Verbal
2. Nonverbal
3. Physical activity
4. Satisfactory response

5. Unsatisfactory response
6. Pupil initiated actions
7. Pupil initiated verbal

Items 6 and 7, by definition, do not fall under the heading "response" but are placed here for convenience.

Reacting

1. Praising the physical response(s) of the pupils
2. Encouraging the physical response(s) of the pupils
3. Motivating the physical response(s) of the pupils
4. Accepting the physical response(s) of the pupils
5. Criticizing the physical response(s) of the pupils
6. Correcting the physical response(s) of the pupils
7. Correcting the pupils' behavior
8. Encouraging the pupils to do better and to be more skillful
9. Teacher demonstrating to improve the skill of the pupils
10. Teacher demonstrating to give the pupils further ideas and possibilities

11. A child or children demonstrating to show skill
12. A child or children demonstrating to show new ideas

The last four subdivisions did not entirely fit under the definition of reacting behavior as sometimes they were used before the pupils had responded. As a matter of convenience, however, they are grouped under the heading of reacting.

Silence or Confusion

1. Useful silence
2. Unprofitable silence
3. Noise
4. Misbehavior
5. Lack of organization

The analysis of behavior in this way gave a list of some 37 subdivisions. Armed with these the investigator observed further lessons. It was immediately apparent that there were far too many subdivisions for an observer to categorize accurately. This supported the information found in reviewing the literature. The number of categories had to be, as previously suggested, between 15 and 20. Definitions for each category had to be developed that were exclusive, exhaustive, unambiguous, easily understood and yet at the same time were useful.

Observation of live lessons, video-tapes, scripts

and discussion with local teachers, university personnel and consultants in elementary school physical education resulted in the development of a tentative set of categories and definitions.

The Development of the Structuring Categories

Although structuring is an important part of teaching behavior it did not occur that often in elementary school physical education. It was decided, therefore, to collapse the subdivisions into two categories. First, physical education centered lecturing behavior and secondly, non-physical education centered lecturing behavior.

The Development of the Soliciting Categories

It was important to maintain an indication of the amount of controlling influence the teacher used in soliciting responses but at the same time it was difficult for an observer to differentiate accurately and quickly between too many different categories. It was therefore decided to experiment with three basic soliciting categories: the direct command, the limitation and the free or indirect solicitation.

Teacher questioning took many forms but at this stage of the investigation it was considered that these could be dealt with collectively. If this study indicated that teacher questioning formed a significant part of the teacher's behavior it could be examined in further research.

As the instrument was viewed as a whole the response of the pupils following the questioning would indicate whether the question called for a verbal or activity response.

Observation indicated that some teachers gave directives while the children were working. Another category entitled interjecting directive was added.

The Development of the Response Categories

Pupils respond in many ways because of, or in spite of, the solicitations of the teacher. The responses or pupil behavior is material for a study in itself. This study, however, focusses on teacher behavior and therefore is concerned with pupil behavior in as much as it affects the teacher's behavior. The reactions of the teacher would, therefore, indicate the appropriateness of the response(s) as perceived by him. Responses by the pupils were divided into two categories: verbal responses and physical activity responses. A third category, pupil initiating actions, was added.

The Development of the Reacting Categories

The praise, encouragement, reinforcement, accepting subdivisions were collapsed into one category; namely "confirming reactions". In the light of Skinner's work in "operant conditioning" and "shaping", unwanted responses should be ignored and desirable responses should be reinforced. It was decided to differentiate between per-

formance, which is subject (physical education) oriented and is activity which is carrying out the task or solicitation set by the teacher, and behavior, which is the general deportment, propriety or manners of the children as well as the way they treat others.

Confirming reactions could be based on performance or behavior.

The correcting reactions of the teacher could also be related to the performance or the behavior of the pupils.

Teachers sometimes reacted to the pupils' responses while they were working and at other times stopped the class in order to react. The reactions were aimed at either making the pupils more versatile or at making them more skillful. The following four categories were developed:

a) teacher extending reactions succeeding response,

b) teacher extending reactions interjecting during response,

c) teacher focussing reactions succeeding response,

and d) teacher focussing reactions interjecting during response.

Although teachers used demonstration in many

different ways and for many different reasons it was considered appropriate to categorize these collectively in one category in order generally to describe teaching behavior. If demonstration proves to be a significant part of elementary school physical education behavior it will merit further study.

The Development of the Silence or Confusion Categories

Silence and confusion was dealt with collectively under one category.

THE PRELIMINARY INSTRUMENT

In this way a preliminary observational instrument composed of 20 categories was developed from the literature, from observation and from discussion with local persons involved in elementary school physical education. Table 3 outlines the categories of the preliminary observational instrument.

The definitions of each category can be found in Appendix C.

THE VALIDITY OF THE INSTRUMENT

In order to test the content validity of the

TABLE 3

A Preliminary Observational Instrument

Categories for Observing Teacher Behavior in Elementary School Physical Education	
Teacher Structuring	1. Teacher physical education centered lecture type behavior
	2. Non-physical education teacher behavior
Teacher Solicitation	3. Command, authoritarian directive
	4. Limiting, restrictive directive
	5. Open, free directive
	6. Interjecting directive
	7. Teacher questioning
Pupils' Response	8. Pupils' verbal response
	9. Pupils' activity response
	10. Pupils' initiating action
Teacher Reacting	11. Teacher confirming performance reactions
	12. Teacher confirming behavior reactions
	13. Teacher correcting performance reactions
	14. Teacher correcting behavior reactions
	15. Teacher extending reactions succeeding response
	16. Teacher extending reactions, interjecting
	17. Teacher focussing reactions succeeding response
	18. Teacher focussing reactions, interjecting
	19. Demonstration
Other	20. Silence or confusion

observational instrument, it was decided to ask experts in the area of elementary school physical education for their evaluation. Eight persons from across Canada were chosen for their expertise as writers, lecturers, administrators, and teachers in elementary school physical education. The names were chosen from recent books, articles, convention programs, and workshops.

An introductory letter (Appendix D) describing interaction analysis and the purpose of the instrument was prepared. A questionnaire was developed to ensure that the feedback would cover pertinent aspects of the instrument and yet would allow free comments to be made by the experts. The questions in the questionnaire (Appendix E) were based on the "concepts of classification" cited in the previous chapter which according to Glassford (1970) are criteria of a "good" classification system.

Replies were received from six of the eight experts. Reminders were sent to the remaining two experts but replies were not received. (It was later learned that at least one of these was on leave at the time of the evaluation.) The replies were collated and examined. The general consensus was: a) that the instrument generally described adequately what "goes on" in elementary school physical education; b) that there were some minor incidents that might occur that were not covered by the categories of

the instrument; c) that one or two categories, for example the praising behavior category, were redundant; d) that there was some amount of overlap in the definitions of several categories, for example the reacting by the teacher categories; and e) that most of the definitions were clear and exclusive.

THE REVISED INSTRUMENT

A second instrument was constructed in light of these comments. Several categories were collapsed and the definitions widened in some cases and made more explicit in others. The seventeen categories of the second instrument can be seen in Table 4. The revised definitions for each of the categories are included in Appendix F which is the manual for training observers.

The second instrument was developed through a theoretical framework, a review of current literature in interaction analysis and teaching elementary school physical education, observation of video-tapes and lessons and, finally, the evaluation of experts from across Canada. This formed the basis for the manual for training observers. (See Appendix F.).

TABLE 4

The Revised Observational Instrument

Categories for Observing Teacher Behavior in Elementary School Physical Education	
Teacher Structuring	1. Physical education centered structuring type behavior
	2. Non-physical education behavior
Teacher Solicitation	3. Command, authoritarian directive
	4. Limiting, restricting directive
	5. Open, free directive
	6. Teacher questioning
Pupils' Response	7. Pupils' verbal response
	8. Pupils' activity response
	9. Pupils' initiating action
Teacher Reacting	10. Confirming performance reactions
	11. Confirming behavior reactions
	12. Correcting (rejecting) performance reactions
	13. Correcting behavior reactions
	14. Extending reactions
	15. Focussing reactions
	16. Demonstration
Other	17. Silence or confusion

CHAPTER 4

TESTING THE INSTRUMENT

In order to be able to use a test or an observational instrument it is necessary to establish that it is objective and reliable as well as being valid. This chapter describes the methods, procedures and results of testing the objectivity and reliability of the observational instrument.

PROCEDURES

To Establish Objectivity

Objectivity may be defined as the degree of uniformity with which various individuals score the same test. This may be phrased in another way as the degree to which a test may be administered by a group of testers and give approximately the same result. It is inter-judge agreement.

Three observers were trained, using the "Training Manual" developed in the previous chapter and included as Appendix F, in the use of the observational instrument.

The three observers were volunteers from the graduate program in physical education in the Department of Elementary Education at the University of Alberta. They were all experienced teachers and were pursuing elementary school physical education as their area of further study. A series of training sessions was conducted of some fifteen hours which involved learning the categories, practice in coding scripts and practice in coding video-tapes. The group would stop from time to time to discuss particular problems, clear up differences of interpretation and make decisions with respect to the placing of an observed behavior in a particular category. After this training time the observers felt ready to practice coding in the live situation. Approximately two additional hours were spent recording the happenings in live elementary school physical education lessons. By now the observers felt competent to move into the testing situation.

Ten teachers were chosen from the Edmonton Public School System. A list of elementary school physical education teachers who possibly would be prepared to participate in the study was obtained from the Physical Education Office of the School Board. The teachers were interviewed and asked if they wished to participate in the study. In this way ten teachers were obtained and permission was secured for their participation in the study. The teachers

all taught division two, that is grades four, five and six; had good experience teaching elementary school physical education; were of various ages; and included both males and females. The fact that this was an opportunistic sample was not considered to be a problem since the major purpose of this study was the development of a valid, objective and reliable instrument. Each teacher was observed for three separate lessons by combinations of two observers. A diagrammatic form of the observational procedure is shown in Table 5.

TABLE 5

Pairing of Observers for each Lesson for each Teacher

Teacher	Lesson		
	1	2	3
1	AB	AC	BC
2	AC	BC	AB
3	BC	AB	AC
4	AB	AC	BC
5	AC	BC	AB
6	BC	AB	AC
7	AB	AC	BC
8	AC	BC	AB
9	BC	AB	AC
10	AB	AC	BC

A = 1st Observer : B = 2nd Observer : C = 3rd Observer

It was found impossible to follow Table 5 completely with respect to the order of observation because the observation had to be carried out when the teacher who was the classroom teacher was teaching physical education and when the observers were available. Each teacher was observed by each of the three combinations of trained observers but, for two of the teachers it was possible to observe only two lessons. One of these teachers was ill and, in the case of the second teacher, the school gymnasium was being repaired.

After a great deal of experimentation it was decided that the recording of categories would be made on a cassette tape recorder using two microphones. In this way the voices of the two observers were recorded on one tape. The tape was then transposed to vertical lists of categories maintaining the original order of the events (Appendix G).

The recorded observations of the observers were compared to test the objectivity or inter-judge agreement of the instrument.

To Establish Reliability

Reliability of an instrument can be defined as the degree of consistency with which a measuring device may be applied or the degree to which one can administer the test to a group and then retest in an identical situation to give approximately the same result. In other words,

reliability is intra-judge agreement.

In order to test for the reliability of an observational instrument it is necessary to observe the same situation twice. The results may then be compared to examine to what extent the results are the same.

In this study a live situation could not be considered since exact duplication of two live lessons would have been impossible. The important factor was to have an exact duplicate of teaching and therefore the medium of video-tapes was chosen as the means by which to test the reliability of the instruments. The previous arguments put forward against the use of video-tapes for observation were considered irrelevant for this part of the study. The tapes to be analyzed were made in a television studio using a small group of pupils. The acoustics and quality of the picture were acceptable. Such a situation would be virtually useless for the observation of normal teacher -behavior but served as a consistent set of behaviors by which to test the reliability of the instrument.

A video-taped lesson was chosen because of the satisfactory quality of the sound and the picture. The three trained observers watched the tape and coded the behaviors and recorded the appropriate categories as they occurred. The same video-taped lesson was viewed again by the three observers one week later.

The categories recorded by each observer in the

first session were compared with those recorded by the same observer one week later by means of Scott's coefficient.

STATISTICAL TREATMENT

Bales (1950) used a chi-square technique to test reliability. Other researchers (Flanders, 1966) have used Scott's coefficient (1955). Flanders (1966) experimented with both chi-square and Scott's coefficient techniques concluding that the Scott's coefficient technique was more appropriate.

In this study the Scott's coefficient technique as described by Flanders (1966) was used as a means of testing inter- and intra-judge agreement.

> Scott calls his coefficient 'pi' and it is determined by the two formulae below:

$$\Pi = \frac{Po - Pe}{100 - Pe} \qquad (1)$$

> Po is the percentage of agreement, and Pe is the percentage of agreement expected by chance which is found by squaring the proportion of tallies in each category, summing these over all the categories, and multiplying by 100.

$$Pe = 100 \sum_{i=1}^{k} pi^2 \qquad (2)$$

> In formula two there are k categories and pi is the proportion of tallies falling into each category. Π, in formula one, can be expressed in words as the amount that two observers exceeded chance agreement divided by the amount that perfect agreement exceeds chance. (Flanders, 1966, p. 13).

RESULTS AND DISCUSSION

Objectivity or Inter-Judge Agreement

Calculations using Scott's coefficient, as recommended by Flanders, are shown in Table 6.

TABLE 6

Scott's Coefficient for Inter-Judge Agreement

Teacher	Lesson			Average
	1	2	3	
1	.87	.71	.80	.80
2	.68	.60	.88	.72
3	.87	.80	.83	.83
4	.89	.82		.85
5	.79	.74	.79	.78
6	.89	.85	.90	.88
7	.83	.91	.89	.88
8	.86	.78	.79	.81
9	.93	.85		.89
10	.82	.58	.76	.72
Average Π of all Observers on all lessons = .82				

The overall Scott's coefficient (π) over the 28 observations was .82. Flanders suggests that a coefficient of .85 using his FSIA system is acceptable for objectivity. It should be noted that the Flanders system is based on 10 categories whereas the instrument developed in this study is composed of 17 categories. The Flanders system focusses only on the verbal interaction whereas the instrument for observing elementary school physical education looks at both verbal and non-verbal interaction. It would seem easier to identify and then code verbal behavior than non-verbal behavior. Non-verbal behavior is more easily missed or wrongly classified. The observations were also performed live with rapidly moving events in the gymnasium. There was no chance to "playback" a behavior once it had occurred. It is to be expected, therefore, that there would be greater opportunity for error in the observational instrument developed in this study. For an instrument that included 17 categories, non-verbal behavior and was used in live observation in gymnasia it is suggested that a Scott's coefficient of between .75 and .80 might be acceptable. The percentage difference between the observers for each lesson is shown in Table 7.

Most tests of the objectivity of observational

TABLE 7

Percentage Difference per Category per Lesson Between Observers

CATEGORY	T			E			A			C			H			E			R			S					
	1			2			3			4			5			6			7			8			9			10		
	1	2	3	1	2	3	1	2	3	1	2	1	2	3	1	2	3	1	2	3	1	2	3	1	2	1	2	3
	Ga[1]	Gy[2]	Gy	Gy	Gy	Gy	Gy	Ga	Ga	Ga	Ga	Ga	Ga	Ga	Ga	Gy	Gy	Ga	Ga	Ga	Ga	Ga	Ga	Gy	Gy	Gy	Gy	Gy
1	1.2	.4	.3	.5	1.4	.5	.6	2.6	.1	.3	2.1	4.3	2.3	1.5	1.3	.6	0	4.8	.5	.2	2.5	1.1	2.2	0	1.0	1.7	.5	1.7
2	0	.3	.1	.2	.1	.1	.7	.5	1.0	0	0	0	.3	.6	.3	.1	.1	0	.1	.1	.2	0	.4	.3	.2	.6	.6	.1
3	.8	3.7	.8	4.8	1.4	.5	1.1	1.8	2.9	.4	.8	4.2	1.9	2.5	1.8	.3	1.0	1.0	1.1	1.1	1.1	2.5	1.3	.4	.7	.9	2.0	2.7
4	.2	1.7	.1	1.0	2.0	.3	1.4	0	.4	.7	0	0	.6	0	.8	.4	.1	1.7	.2	0	.3	0	.4	.6	0	1.8	1.2	1.0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.5	.5	0
6	.3	1.6	1.2	1.0	2.3	.4	1.2	.2	.5	.3	1.6	1.2	1.2	1.0	.3	.4	.1	.3	.3	.6	.1	.2	0	.5	1.7	1.8	.7	.5
7	1.0	.1	.2	.1	1.5	0	.3	.2	.6	.3	.6	0	.3	.6	.2	.9	.8	.4	.1	.1	.7	.7	2.5	1.3	1.8	.3	.5	0
8	1.2	5.0	5.0	9.3	4.1	1.6	.2	2.4	2.5	.3	3.0	.6	5.9	3.4	.4	1.4	1.8	0	1.0	.8	1.3	1.6	.2	.4	0	1.7	6.2	4.3
9	0	.5	.4	.9	3.2	.4	.9	.5	.4	0	.7	.5	0	.1	0	1.3	.3	.1	0	.7	1.8	1.1	1.3	.6	1.4	1.6	.7	.1
10	1.2	2.9	3.4	.3	.4	1.9	2.2	.5	.5	3.5	2.2	.9	1.9	3.1	.1	.8	.4	.3	.1	3.2	.3	.8	.9	.3	.7	1.4	5.2	4.0
11	0	.3	0	0	0	0	0	0	0	.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.6	0	0	0
12	.2	.5	.3	1.9	3.0	1.8	.1	.7	.1	.7	.4	.7	1.5	0	.1	.1	.7	.4	.6	.8	1.9	1.7	1.3	0	1.2	.4	1.6	.2
13	1.0	.1	.8	.1	1.2	.3	.6	.7	1.2	.7	.8	1.8	.5	.8	.4	1.5	.6	2.1	0	.4	.1	.1	0	.6	.3	.5	0	.1
14	.5	.1	2.0	1.6	2.6	.1	.1	2.1	.9	.1	.1	.5	.8	.5	.9	.4	1.1	.9	.4	.4	.4	1.1	.9	.6	1.6	.6	3.0	.7
15	2.4	5.4	1.2	1.8	2.0	1.2	1.1	3.5	1.4	.3	.7	.4	3.6	2.4	1.3	3.9	.4	.3	3.0	.1	.1	5.6	2.5	.2	1.5	.8	8.6	3.9
16	0	1.1	.1	.5	.4	.3	.9	.6	.6	.9	.4	2.4	.3	.4	.1	.6	.2	2.0	.2	.3	1.1	.2	.4	0	0	.3	.6	.3
17	.3	.3	.3	1.1	2.6	.5	.3	.9	.5	.5	1.4	.5	.3	.5	.6	0	.9	.2	0	.4	0	0	.9	.3	.6	0	0	0

[1] Ga = Games [2] Gy = Gymnastics

instruments used chi-square, Scott's coefficient or some other form of statistical treatment that dealt with the agreement between recorded scores in a gross way and did not take into consideration the sources of the errors. It was decided, in this study, to attempt to identify the type of observational error. The percentage of errors caused by one observer failing to record a particular behavior (omissions) and the percentage of errors caused by differences between the coded categories of the two observers (disagreement) were calculated from the vertical lists of coded categories. The sources of error are tabulated in Table 8.

The total differences amounted to 24 percent of the total tallies recorded. Nineteen percent of these differences were caused by one observer failing to record a behavior that the other observer recorded. The other 5 percent of the differences were due to disagreement between the observers in categorizing a teacher's behavior. In terms of a percentage of the total number of errors, 78 percent were caused by omission of categories and 12 percent were caused by disagreement between observers.

By far the greatest proportion of errors, therefore, was caused by errors of omission. This posed two major questions to the investigator. First, "Were the errors due to an observer failing to record a category caused by poorly defined categories?" Secondly, "Should

TABLE 8

Sources of Error

(Expressed as Percentage of Total Tallies for Each Lesson)

	Lesson 1			Lesson 2			Lesson 3		
Teacher	TD	D	O	TD	D	O	TD	D	O
1	18.4	4.0	14.0	26.7	7.3	19.6	23.6	5.1	18.5
2	25.1	5.6	19.5	33.9	8.7	25.2	25.8	4.5	21.2
3	22.9	4.8	18.1	34.9	10.7	24.2	24.7	2.7	22.0
4	25.2	6.9	18.2	20.3	2.2	18.1			
5	40.9	6.4	34.5	27.2	3.8	23.4	23.0	3.4	19.6
6	23.6	6.6	23.6	19.8	2.3	17.4	14.7	1.5	13.2
7	31.9	9.4	22.5	10.2	2.6	7.7	14.5	1.8	12.7
8	26.8	6.6	20.3	24.5	5.9	18.6	19.2	2.0	17.2
9	15.5	4.8	10.7	23.3	4.2	19.1			
10	20.4	2.2	18.2	30.8	7.9	22.9	25.7	5.6	20.1

Errors for all teachers for all lessons:

TOTAL DIFFERENCE (TD) = 24.1

DISAGREEMENT (D) = 5.1

OMISSION (O) = 19.0

78% of total errors were caused by omission of categories
12% of total errors were caused by disagreement between observers in categorizing a teacher's behavior

changes be made in the training procedures to attempt to eliminate errors of omission?"

A subjective evaluation of the categories by the observers tended to indicate that they understood the categories and the types of behavior that would fall under that category. The main problems seemed to be momentary lack of concentration and failure to perceive a particular form of behavior. This is supported by the fact that many of the omissions were in the praise and "coaching" categories where a small gesticulation could have been recorded by one observer and missed by the other observer. This would tend to indicate that the definitions were lucid. Furthermore, since the number of errors caused by disagreement between the observers was relatively low, 5 percent of the total tallies, it was considered that the definitions of the categories were clear and the categories themselves were exhaustive.

The second question proved more difficult to answer. The frame of reference filter forms an essential part of interaction between people. One key part of interaction is that acts are received by different people in different ways. It seemed possible, by making rigid ground rules, to make an interaction observational instrument "interaction-proof" and miss the subtleties involved in communication. The purpose of the instrument would dictate

the accuracy demanded of the instrument. If the observational instrument was to be used for scientific research few errors could be tolerated. If, however, the instrument was to be used in order to provide feedback to student teachers and teachers about their teaching behaviors, then it would seem important that these subtleties are preserved. For example, if a teacher was consistently using a smile as a form of praise this may be recorded by one observer and missed by another observer. This would set the stage for a discussion about the form of feedback from teacher to pupil. Some children would perceive the smile as praise whereas others would miss this and therefore receive no reinforcement. In this way the teacher may well develop other techniques by which to convey praise and encouragement and so "get through" to a greater proportion of the children. An important objective of this study was to make the instrument available to teachers in the field and therefore the definitions were considered acceptable.

It was concluded that the observational instrument met reasonable standards for objectivity ($\Pi = .82$).

In order to look more closely at the causes of the disagreements a table (Table 9) was drawn up to show which categories observers disagreed on. Fifteen percent of the disagreement errors or .75 of the total errors were caused as a result of confusion between two categories,

TABLE 9

Sources of Disagreement Between Categories

Category	T E A C H E R S										% Total Tallies
	1	2	3	4	5	6	7	8	9	10	
14 - 15	12	9	7	1	2	6	3	12	2	18	15.2
1 - 3	5	0	10	4	10	8	14	4	0	2	12.0
6 - other cat.	2	-	5	3	9	7	3	9	9	3	10.5
12 - 15	7	6	9	2	5	1	4	5	1	-	8.4
3 - 15	7	-	4	-	2	3	6	6	-	1	6.1
3 - 4	7	4	1	2	2	-	1	1	4	3	5.3
3 - 14	8	3	3	1	-	-	2	2	1	1	4.4
8 - 9	-	-	5	1	1	2	1	1	5	2	3.8
1 - 15	-	1	1	-	4	3	1	1	1	1	2.9
4 - 15	2	5	1	-	-	1	1	1	2	1	2.9
3 - 13	1	-	-	2	1	3	1	3	1	-	2.5
10 - 15	-	2	2	-	3	-	2	-	2	1	2.5
1 - 13	1	1	1	-	1	1	-	3	2	-	2.1
13 - 17	1	3	1	-	2	-	2	1	-	-	2.1
12 - 13	3	1	1	-	1	-	1	-	-	2	1.9
4 - 14	2	1	-	-	-	2	-	-	-	3	1.7
10 - 12	-	1	2	1	1	-	1	-	-	-	1.3
8 or 9 - 17	1	-	-	2	-	-	2	-	-	-	1.0
12 - 14	2	1	-	-	-	-	-	1	-	1	1.0
1 - 4	1	-	-	-	-	1	3	-	-	-	1.0
1 - 17	-	-	-	3	-	-	1	-	1	-	1.0
7 - 9	-	-	-	2	1	-	1	-	1	-	1.0
1 - 14	1	-	-	-	-	1	-	1	1	-	.8
13 - 15	-	-	-	-	2	-	1	1	-	-	.8
3 - 12	1	-	-	-	-	1	1	-	-	-	.6
10 - 14	-	3	-	-	-	-	-	-	-	-	.6
15 - 16	-	-	-	-	1	-	2	-	-	-	.6
1 - 16	-	-	-	-	1	-	2	-	-	-	.6
8 - 16	-	-	1	-	1	-	-	-	-	-	.4
7 - 12	-	-	-	-	-	-	2	-	-	-	.4
3 - 10	-	1	-	1	-	-	-	-	-	-	.4
1 - 10	-	-	-	1	1	-	-	-	-	-	.4
1 - 12	-	-	1	-	-	-	1	-	-	-	.4
15 - 7	-	-	-	-	2	-	-	-	-	-	.4
8 - 15	-	-	-	-	1	-	-	-	-	-	.2
10 - 9	-	-	-	-	-	1	-	-	-	-	.2
10 - 11	-	-	-	-	-	-	-	-	1	-	.2
10 - 16	-	-	-	-	1	-	-	-	-	-	.2
1 - 2	-	-	-	-	-	-	-	1	-	-	.2
3 - 8	-	-	-	-	1	-	-	-	-	-	.2
4 - 5	-	-	-	-	-	-	-	-	-	1	.2
5 - 14	-	-	-	-	-	-	-	-	-	1	.2
7 - 10	-	-	-	-	1	-	-	-	-	-	.2
7 - 14	-	-	-	-	1	-	-	-	-	-	.2
7 - 16	-	-	-	-	1	-	-	-	-	-	.2

namely, extending type reactions (category 14) and focussing type reactions (category 15). This was not surprising since the line between the two categories is fine and may well be perceived by two people in different ways. Disagreement between structuring behavior (category 1) and direct solicitation (category 3) accounted for 12 percent of the disagreement errors. From time to time a teacher will move from structuring behavior into a directive or from a directive move into organizing behavior. These rapid changes may easily be missed by one observer who records a second tally for the first category. Failure to recognize a question amounted to 10 percent of the total disagreement errors or .5 percent of the total errors. It is possible that one observer might record a question category (6) whereas the other observer perceived this as a rhetorical question or a command and therefore classified the occurrence under another category.

It can be seen that by far the greatest majority of errors (78%) was caused by the failure of one or the other of the observers to recognize and record a particular behavior. In order to explore this more fully the researcher returned to Runkel's model of interaction which was part of the framework for this study. It is noted that the teacher behavior passes through the pupils' frame of reference filter. Children in the same class may well

perceive the teacher's behavior in a different way according to their different frame of reference filters. In the same way observers would reflect the same tendency. The investigator then went back to the coded categories and additional notes made during the observation to see if this might have occurred. It is noted that the lowest Scott's coefficients were for teachers two and ten. These two teachers tended to use subtle teaching techniques; for example a smile, a frown, a nod of the head. Examination of Table 8 shows that a high proportion of the errors for teachers two and ten were caused by omission. It is suggested that the inconspicuous teaching behavior used by these teachers passed through one observer's frame of reference filter but was filtered out by the other observer's frame of reference filter.

The questions facing the investigator were: Should the definitions of the categories be changed? Should the ground rules of the observation be changed to eliminate completely the chance of one observer recording a behavior which the other observer missed? The tone of the teacher's voice might cause an observer to code a reaction by the teacher as correcting (category 12) while the other observer coded this as a focussing reaction (category 15). The frame of reference filter of the observer may affect the perception of that observer. The

direct solicitation category (category 3) would seem to be the category most frequently involved in disagreements (3-15, six percent; 3-4, five percent; and 3-14, four percent of the total disagreement errors).

Different pairings of observers showed some differences as is shown in Table 10.

TABLE 10

Scott's Coefficient Between Pairs of Observers

Teacher	Observer		
	AB	AC	BC
1	.80	.71	.87
2	.61	.68	.88
3	.80	.84	.87
4	.82	.89	
5	.79	.74	.79
6	.85	.90	.89
7	.89	.91	.83
8	.79	.78	.86
9		.85	.93
10	.58	.76	.82
Average	.77	.81	.85

It would appear that observers B and C were the most like minded, that is, had similar frame of reference filters.

Reliability or Intra-Judge Agreement

The results of the statistical analysis for intra-judge agreement are shown in Table 11.

TABLE 11

Scott's Coefficient for Intra-Judge Agreement (Reliability)

Observer	Scott's Coefficient
A	.92
B	.91
C	.93
Average Π = .92	

The average Scott's coefficient, Π, was .92 which is well above the acceptable Π = .85 suggested by Flanders. Observer A had a Scott's coefficient of .92, observer B had a coefficient of .91 and observer C a coefficient of .93. It was noticed that the main source of error was between category 14 and category 15. This

is a similar pattern to the sources of error found in the inter-judge agreement. It was concluded that the instrument developed in this study achieved an acceptable level of reliability.

INTER-JUDGE AGREEMENT USING VIDEO-TAPED LESSONS

Although video-tape is not the most acceptable method of observing normal teacher behavior in elementary school physical education, it was decided to use the data obtained from tests of reliability to analyze inter-judge agreement.

The inter-judge agreement is shown in Table 12.

TABLE 12

Scott's Coefficient for

Inter-Judge Agreement Using Video-Taped Lessons

Video-Tape	Observer		
	AB	AC	BC
Lesson 1	.93	.90	.90
Lesson 2	.92	.89	.87
Average Scott's Coefficient for Video-Taped Lessons Π = .90			

The average Scott's coefficient for all the taped lessons was .90. This was somewhat higher than the Scott's coefficient obtained for the live observation. This was to be expected since the video-taped lesson could be replayed if any behaviors were missed. The objectivity of the observational instrument obtained by analyzing data recorded from a video-taped lesson supported the conclusion that the instrument achieved an acceptable level of objectivity.

SUMMARY

In this chapter the inter-judge and intra-judge agreement of the instrument were tested. Scott's coefficient was used in the statistical analysis. The average Scott's coefficient for inter-judge agreement was .82 and the average coefficient for intra-judge agreement was .92. It is, therefore, concluded that the instrument met the minimum acceptable levels of objectivity and reliability.

CHAPTER 5

SUGGESTIONS FOR ANALYZING AND DISPLAYING DATA

INTRODUCTION

It must be remembered that the purpose of this study was to develop an observational instrument with which to analyze teacher behavior. The discussion in this chapter is, therefore, very tentative and can in no way be interpreted as typical or average teacher behavior. The data gathered from the observation of the ten teachers over three lessons are used as examples in order to demonstrate how future data may be analyzed and displayed. Such a discussion may, however, prove useful in pointing a direction or directions for future study. Since this study is perceived as a beginning in looking at teacher behavior in elementary school physical education this should prove to be most useful.

An attempt has been made in this chapter to concentrate on simple but clear ways of displaying and analyzing data so that the instrument could be used readily by teachers and student teachers.

It must be remembered throughout this discussion

of the data that at no time can any reference be made to the proportion of TIME spent in any one category. The study was designed to record categories on a change of behavior. Reference can only be made to such things as the proportion of recorded "tallies". If later researchers wish to relate to elapsed time, a time factor must be built into the observational instrument.

DISCUSSION

Table 13 shows the percentage of tallies per category for all of the lessons, the games lessons, and the gymnastics lessons. The relationship of the percentage of each tally in each category is more easily seen in the histograms (Table 14 and Table 15). This information can provide a profile of teacher behavior in elementary school physical education. The limited sample of this study indicates that approximately one-third of the tallies recorded were for pupils' physical activity. The teachers tended to give as many direct, command solicitations as they did "coaching" reactions. The total tallies recorded for question and answer dialogue was virtually the same as the total tallies recorded for direct solicitations. On the whole the teachers showed more tallies related to praising pupils' performance than they did tallies related

TABLE 13

The Total Tallies, Range and Average Percentages per Category for All Lessons, Games and Gymnastics Lessons

Category	All Lessons		Games		Gymnastics	
	Range	Average %	Range	Average %	Range	Average %
1	2.6-17.9	8.6	7.1-17.9	10.1	2.6-9.9	6.2
2	0-4.0	1.0	0-4.0	1.0	.5-1.8	1.0
3	8.3-20.6	13.0	8.3-20.6	14.5	8.5-19.0	10.6
4	0-7.0	1.5	0-4.7	.6	.8-7.0	3.0
5	0-.2	0	0-0	0	0-.2	0
6	1.2-13.7	6.8	5.0-10.8	7.0	1.2-13.7	6.4
7	.2-9.6	4.1	1.1-9.6	4.6	.2-8.5	3.5
8	14.1-57.3	32.6	14.1-47.5	31.6	21.8-57.3	34.2
9	.2-4.3	1.8	.2-4.0	1.5	.4-4.3	2.3
10	1.2-12.6	5.6	1.2-8.7	4.4	3.4-12.6	7.6
11	0-.3	0	0-.16	0	0-.3	0
12	.6-3.9	2.0	.6-3.9	2.3	.7-3.7	1.6
13	0-4.7	2.2	1.2-4.7	2.6	0-4.3	1.6
14	.4-10.4	2.8	.4-7.2	2.2	1.7-10.4	3.8
15	5.4-21.9	11.7	5.4-21.2	11.4	5.5-21.9	12.3
16	.3-10.6	4.7	1.0-10.6	5.1	.3-9.4	4.1
17	0-4.1	1.3	0-4.1	1.2	0-4.1	1.4
	Total	17085	Total	10393	Total	6692

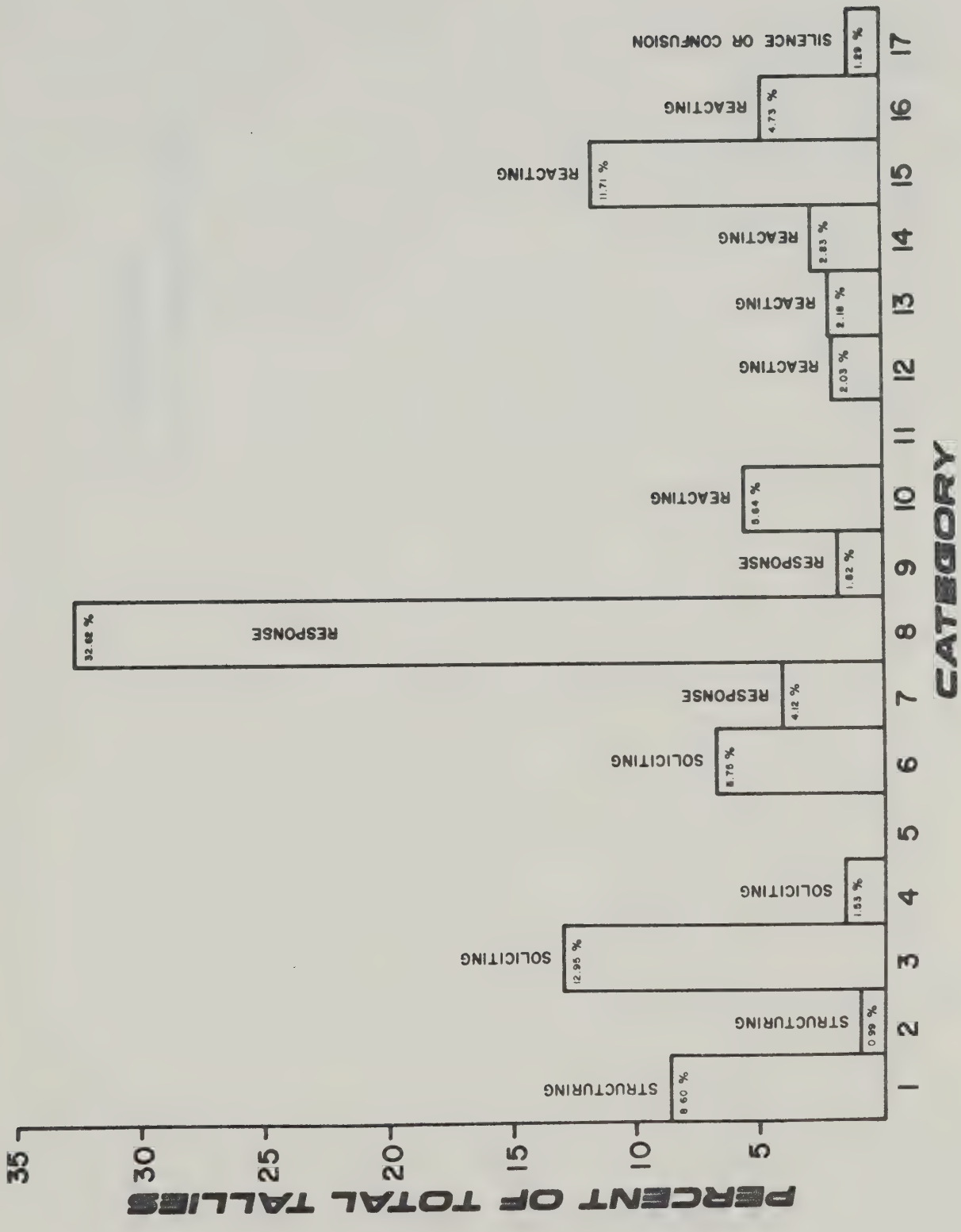

TABLE 14

The Percentage of Total Tallies per Category for all Lessons

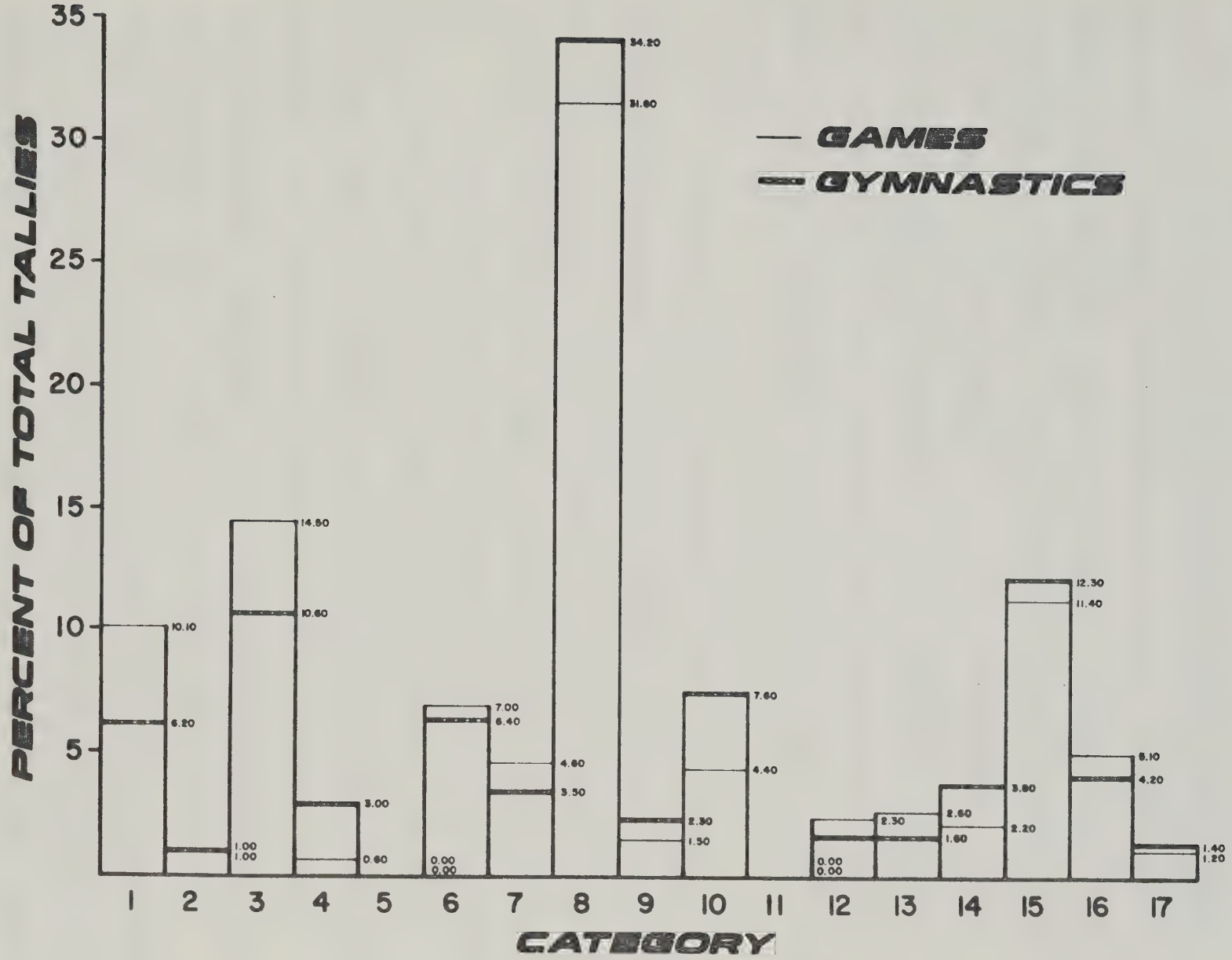

TABLE 15

The Percentage of Total Tallies - Games v Gymnastics

to criticizing both performance and behavior. It was surprising to find that the teachers were inclined to use as many tallies in the criticizing behavior category as they did in the criticizing performance category. In other words the same amount of teacher behavior was devoted to the general conduct and well being of the pupils as to the correcting of the pupils' physical responses. It is noticeable that the teachers in this study used relatively few limitation or free solicitations (categories 4 and 5). There was also relatively little pupil initiated behavior (category 9).

Although it is impossible, from this study, to compare the various parts of the elementary school physical education program, the histogram in Table 15 shows the possibilities for this type of comparison in future studies.

When the teacher behaviors involved in teaching games and gymnastics are compared, as in Table 15, it is apparent that the percentage of tallies recorded in each category were different. Teachers teaching games used more structuring behavior, more direct solicitations, more question and answer dialogue, more criticism, and more demonstrations than did those teachers teaching gymnastics. On the other hand teachers teaching gymnastics used more limitation solicitations, more pupil activity, more praise, and more "coaching" reactions than those teachers teaching games. The percentage of tallies recorded for non-physical

education structuring behavior and for silence and confusion seem to be unrelated to the subject of the lesson.

Tables 16 and 17 show comparisons of the percentages of tallies per category per teacher. In this way teachers may be compared with the average with respect to the percentage of tallies in each category or compared with each other. It must be stressed that no value judgement is implied. The analysis of the teaching behavior gives a profile of what occurred in the lesson. The teacher may compare the actual events with the intended events.

It can be seen from Table 16 that different teachers utilized different percentages of tallies for each category. Future studies, developing this theme, may establish that there are different teaching styles. Teacher 9 showed 9 percent of the tallies in category 3 (direct solicitation) whereas teacher 5 showed 16 percent of tallies in the same category. An examination of category 4 (limitation solicitation) indicates that teacher 5 had .2 percent of tallies in this category compared to almost 5 percent for teacher 2. The number of pupil activity responses ranged from 40 percent of the tallies (teachers 8 and 10) to 25 percent of the tallies (teacher 9). Other comparisons may readily be made by reference to Table 16. It is possible that the intra-teacher differences from lesson to lesson (Table 18) are as significant as the inter-teacher differences.

TABLE 16

Average Percentage per Category per Teacher

Categories	T E A C H E R S									
	1	2	3	4	5	6	7	8	9	10
1	6.7	6.9	8.4	11.7	8.0	10.3	13.5	8.0	6.5	4.2
2	.4	.8	1.5	0	1.3	1.2	.8	1.8	1.2	1.0
3	18.4	11.3	11.1	12.5	16.3	12.0	13.7	10.3	9.3	10.8
4	1.4	4.9	3.8	.6	.2	1.6	.4	.6	1.2	1.6
5	0	0	0	0	0	0	0	0	0	.2
6	5.4	5.8	8.6	8.3	8.2	5.7	5.8	6.5	12.8	1.7
7	3.0	2.8	4.4	8.0	5.9	3.8	2.8	3.5	7.7	.4
8	34.6	36.7	31.4	31.3	26.6	36.4	25.7	40.1	24.6	40.7
9	1.2	1.7	2.6	1.0	1.6	1.1	.9	3.5	2.3	3.0
10	8.2	6.4	4.7	3.6	6.1	5.4	5.3	1.3	6.6	8.6
11	.1	0	0	.1	0	0	0	0	.2	0
12	3.2	1.6	2.6	1.7	2.3	2.0	2.6	1.1	1.3	1.0
13	2.5	1.0	3.1	2.4	2.2	1.6	1.6	3.5	3.4	.5
14	2.7	3.2	3.1	1.5	1.1	2.8	.7	5.0	4.2	5.6
15	7.7	10.3	8.8	10.9	13.7	10.5	16.1	9.6	14.8	15.6
16	3.6	3.0	4.3	2.6	5.3	5.3	9.6	5.4	.6	5.0
17	1.1	1.4	1.7	4.0	1.2	.4	.8	.1	3.4	0
Total Tallies	2184	1473	1565	1334	2008	2007	2117	1679	1370	1348

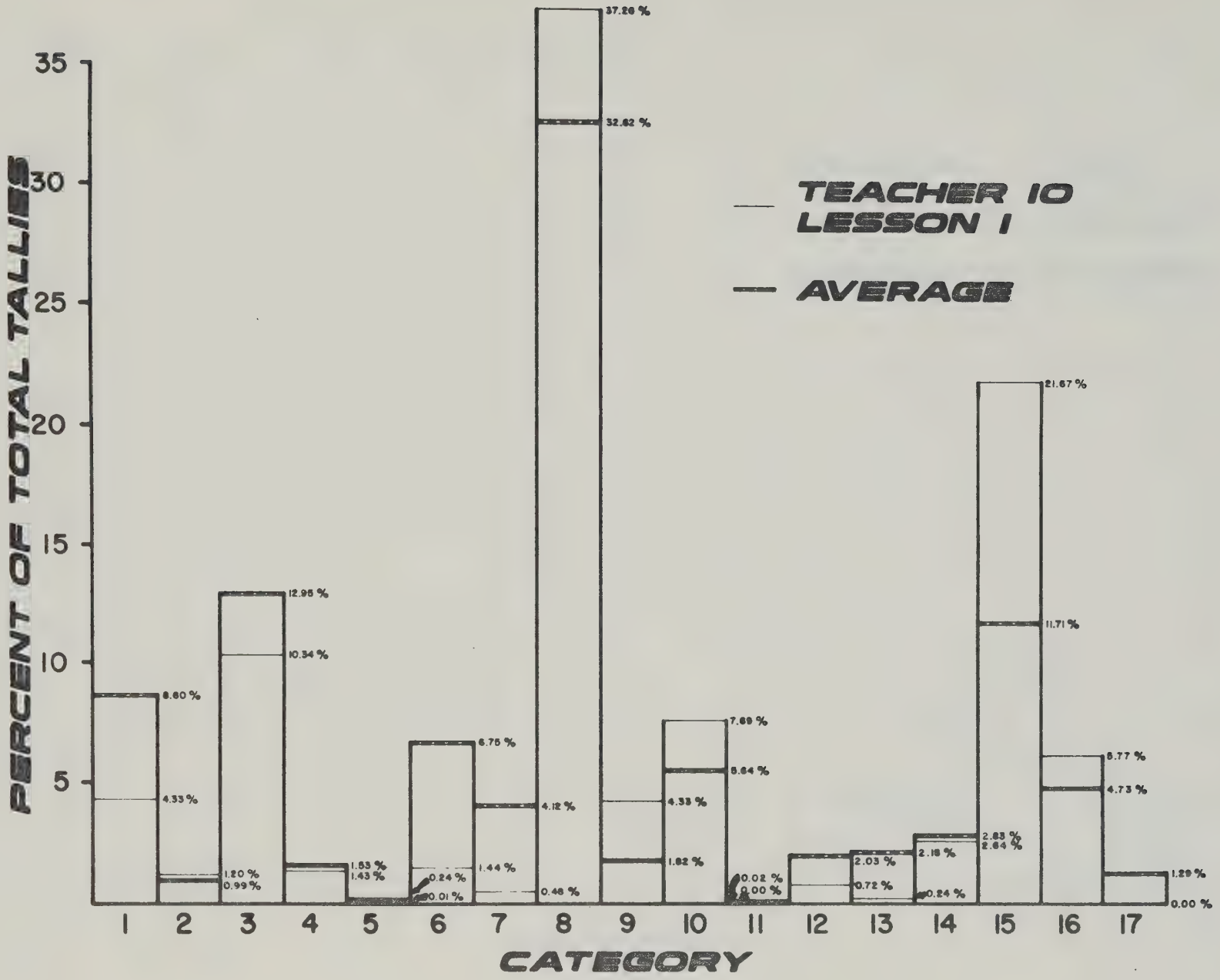

TABLE 17

A Comparison of the Percent of Tallies per Category

Teacher 10 Lesson 1 v Average

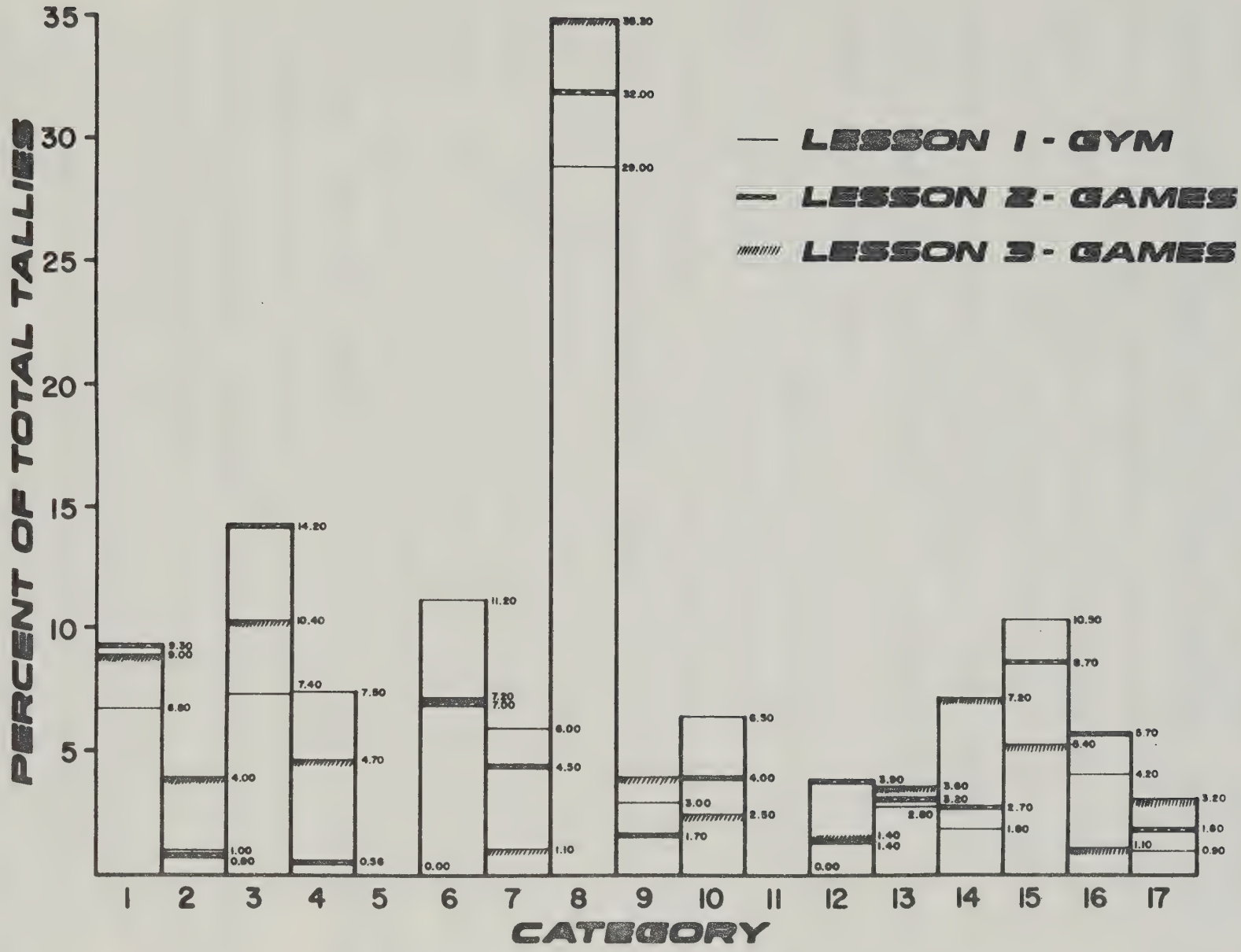

TABLE 18

A Comparison of the Percentage of Total Tallies per Category for Each of the Three Lessons for Teacher 3

The histogram in Table 17 compares lesson one taught by teacher 10 with the average lesson. Teacher 10 shows a tendency towards more pupil activity, more pupil initiated activity, more praise, and more focussing on the quality of the pupils' performance than the average. At the same time the same teacher uses less structuring behavior, fewer direct solicitations, less question and answer dialogue, less criticism, and less silence or confusion than the average.

Some of the teachers in this study showed noticeable differences in behaviors from lesson to lesson. Table 18 shows an example of this using the percentage of tallies recorded for each lesson for teacher 3. The teacher used more direct solicitations in lesson two than in the other lessons. There was more question and answer dialogue in lesson one than in the other lessons. Lesson two showed a higher proportion of tallies in the pupil activity and pupil initiated activity response categories. It is interesting to observe that as the number of direct solicitation (category 3) tallies increased, the number of limitation (category 4) tallies tended to decrease.

In future studies such analysis could indicate the consistency of a teacher's behavior or adaptation of the teacher's behavior, from lesson to lesson, to meet the particular circumstances of a particular lesson.

Further information can be obtained by summing

the tallies of several categories. The grouping of categories will show, for example, the number of tallies recorded for structuring behavior as compared to the number of tallies recorded for soliciting or responding behavior.

Table 19 illustrates the grouping of categories. It can be seen that teacher 8 showed the same amount of structuring behavior as he did soliciting behavior. In lesson three teacher 1 used structuring behavior approximately half as much as soliciting behavior. The same teacher, however, used six times as much soliciting behavior as structuring behavior in lesson two. The teachers showed a tendency to use more reacting behavior (categories 10 - 15) than soliciting behavior. If, however, "coaching" behavior (categories 14 and 15) is compared with soliciting behavior (categories 3, 4 and 5) there are noticeable differences according to the teacher. Teacher 1 used almost twice as much soliciting behavior as "coaching" behavior. On the other hand teacher 10 used almost twice as much "coaching" behavior as soliciting behavior. There are also noticeable differences when the total percentage of tallies related to praising behavior is compared with the total percentage of tallies related to criticizing behavior. These differences range from a ratio of criticism to praise of almost 4:1 for teacher 8 to a ratio of praise to criticism of 7:1 for teacher 10. It is interesting to note that

TABLE 19

Percentage of Combined Categories per Lesson per Teacher

COMBINED CATEGORIES	T			E			A			C			H			E			R			S					
	1			2			3			4		5			6			7			8			9			10		
	1	2	3	1	2	3	1	2	3	1	2	1	2	3	1	2	3	1	2	3	1	2	3	1	2	1	2	3
	Ga[1]	Gy[2]	Gy	Gy	Gy	Gy	Gy	Ga	Ga	Ga	Ga	Ga	Ga	Ga	Ga	Gy	Gy	Ga	Ga	Ga	Ga	Ga	Ga	Gy	Gy	Gy	Gy	Gy
1 & 2 Struct.	7.3	3.1	10.4	8.2	6.3	8.3	7.9	10.2	12.9	8.9	14.0	5.7	10.5	11.8	13.9	10.0	11.8	16.1	9.6	19.4	10.3	8.3	10.7	6.3	9.0	5.5	4.1	6.0
3, 4, 5 Sol.	20.9	18.4	20.0	20.9	15.9	13.4	14.9	14.8	15.1	13.9	12.5	16.0	17.6	16.1	16.0	12.8	11.6	14.1	14.8	12.9	10.7	12.3	9.9	11.7	9.4	11.8	12.2	13.0
10, 11 Praise	6.9	12.6	5.7	3.4	6.3	8.6	6.5	4.0	2.5	4.6	2.9	8.7	4.8	4.5	2.8	6.5	7.2	5.4	5.9	4.2	1.2	1.3	1.3	6.3	7.1	7.7	7.9	9.9
12, 13 Criticism	6.1	4.7	6.1	3.8	3.3	1.4	4.2	7.1	5.0	3.6	4.5	3.1	5.5	5.1	5.6	2.6	2.5	2.8	4.2	3.1	4.8	3.3	5.4	5.8	3.8	1.0	.7	2.7
2, 11, 13 Non P.E.	2.9	1.4	4.4	2.6	2.1	1.1	3.9	4.1	7.6	1.5	3.3	2.6	3.5	4.5	3.1	2.3	2.8	2.5	1.8	2.8	6.4	2.5	6.2	4.7	4.8	1.4	.7	2.3
14, 15 Coaching	9.1	10.9	11.1	7.2	11.5	18.9	12.3	11.3	12.6	11.6	13.2	23.0	8.5	12.0	10.4	15.5	14.1	15.9	17.9	15.9	17.7	15.0	9.4	18.8	19.3	24.5	22.1	21.5
10 - 15 Reaction	18.7	28.1	22.9	14.4	21.1	28.9	23.0	22.5	20.1	19.9	20.6	34.8	18.8	21.6	18.8	24.6	23.8	26.1	27.9	23.2	23.7	19.5	16.0	30.8	30.2	33.2	30.8	34.0
7, 8, 9 Response	58.8	38.1	37.7	43.5	45.9	36.4	37.9	38.1	40.3	40.4	40.0	24.1	40.1	39.1	41.6	39.1	43.4	25.3	33.4	28.6	40.6	48.9	55.5	33.1	35.9	42.1	46.9	43.5

Ga[1] = Games Gy[2] = Gymnastics

teacher 10 registered more non-physical education behavior (categories 2, 11 and 13) than he did praising behavior. It would appear that in physical education, in the elementary schools visited, the pupils were responding for approximately two-fifths of the tallies. However, the pupils were responding on many occasions while the teacher was talking. A simple stop watch recording of activity time would give useful information in addition to that collected using the observational instrument. The pupil activity ratio, as might be expected in physical education, would appear to be greater than the one-third often cited for classroom subjects.

In order to plot recorded categories in a matrix each tally should represent a uniform time unit. This study recorded categories on changes in behavior. Therefore, it is not possible to plot matrices, in the usually accepted form, using the data collected in the study. Since the order of occurrence of each behavior has been preserved, it was considered acceptable to plot matrices simply to show the patterns or cycles of teaching behavior. It should be noted that the point at which one enters the teaching cycle is indeed arbitrary.

Figure 6 shows in general the areas of the matrix into which certain patterns or cycles of behavior will fall. All pupil responses will fall into the central cross. This will show the number of tallies that are devoted

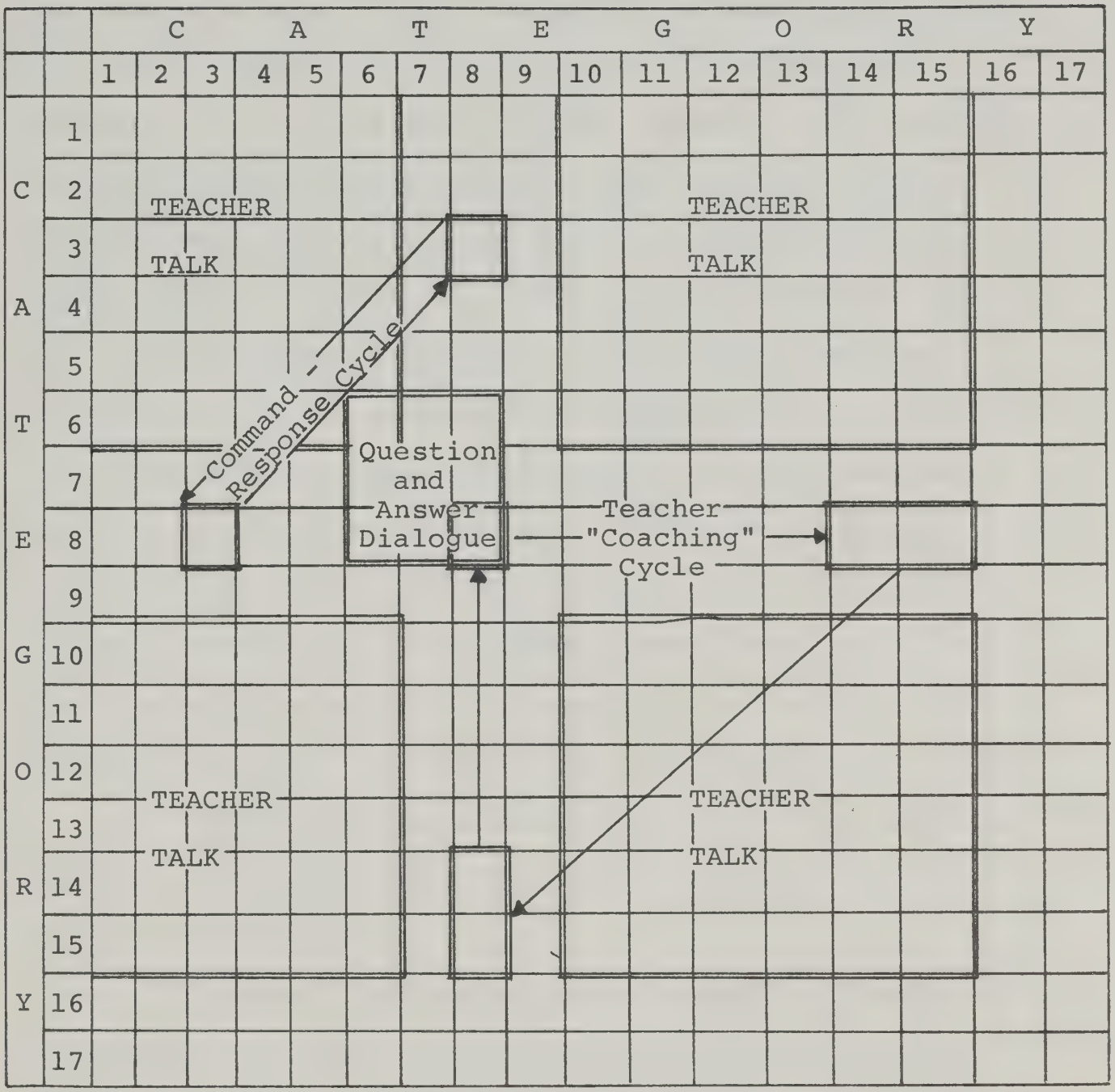

Fig. 6

A Diagram to Show Areas of the Matrix

into which Patterns of Behavior will Fall

entirely to pupil responses. Tallies moving from the 3-8 square and the 8-3 square will show a cycle in which the teacher gives a direct solicitation which is followed by a pupil response and is subsequently followed by another direct solicitation by the teacher. This has been called a command-response cycle. Question and answer dialogue will fall into a rectangle comprised of the squares 6-6, 6-7, 6-8, 7-6, 7-7, and 7-8. Teacher "coaching" will fall into a triangle. The pupils' response, category 8, will be followed by a category 14 or 15 which in turn will be followed by a category 8. The teacher's reaction in the form of praise or confirming behavior will fall into the 8-10, 10-10 and 10-8 squares. Any extended use of a category by the teacher or pupils will fall into the steady state cells, a diagonal across the matrix, for example cells 1-1, 3-3, 6-6, 8-8, 10-10, 14-14, and 15-15.

Data collected in this study have been used, in the next section, to illustrate the use of the various areas of the matrix.

Figure 7 is a matrix from lesson 2 of teacher 8 as observed by observer C. This matrix shows a concentration of tallies around the content cross. This would tend to indicate that the lesson was centered on the pupils' activity and that few extended categories were used.

Teacher 5 in lesson 2 (Fig. 8) demonstrates extensive use of the command-response cycle. Category 3 is

		C		A			T		E		G		O		R		Y	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	3	6						6					1			1	
	2								1									1
A	3							1	25									
	4																	
T	5																	
	6	1						6								5		
E	7	1		1					4								3	
	8	11	2	15			10		30	2	4		1	2	12	11	4	
G	9			2			1							1				
	10						1		4									
O	11																	
	12			1					1									
R	13									1					1	1		
	14							1	12	1							1	
Y	15								9		1		1		1	1	5	
	16								12						1	1	1	
	17								1									

Fig. 7

A Matrix to Show Concentration of Tallies

Round the Content Cross

(Teacher 8 : Lesson 2 : Observer C)

		C		A			T		E		G		O		R		Y	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	2		5			1	1	12									2
	2		1															
	3	1					1		40						1	1	2	
A	4								1									
	5																	
T	6	3		2			1	6	1		1						1	
	7						2	1	1		1		1			1	3	
E	8	12	1	26	1		7		29	1	2		9	2	1	5		1
	9								1									
G	10	1		2					1		1					1	2	
	11																	
O	12	1		3			1		2									
	13	1		2			1		1					1				
R	14			2					1									
	15			2					5					1	1	4	1	
Y	16			2			1	2	1		3					1	1	
	17								2					2				

Fig. 8

A Matrix to Show Use of the Command-Response Cycle

(Teacher 5 : Lesson 2 : Observer A)

followed by a category 8 on 40 occasions and category 8 is followed by a category 3 on 26 occasions.

The matrix of teacher 10 lesson 2 (Fig. 9) clearly shows the use of the "coaching" cycle. Category 8 is succeeded by either a category 14 or 15 on 37 occasions. Subsequently categories 14 or 15 are followed by category 8 on 31 occasions.

Figure 10, a matrix of the first lesson of teacher 6, shows use of the question and answer dialogue.

Use of the praise and encouragement cycle is shown by teacher 1 in lesson 2 (Fig. 11). This teacher also shows use of the criticism cycle as shown by the occurrence of a category 12 after a category 8 on 11 occasions.

Figure 12 is the completed matrix for the three lessons of teacher 1. It is worthy of note that the investigator found the process of compiling a matrix to be useful in the reconstruction of a lesson. As the tallies were plotted it was possible to get a picture of what had occurred in the actual lesson.

Teacher 1 shows a tendency to using a high proportion of command-response behavior. The activity of the pupils was extended on many occasions. If this activity was not followed by another command it was most probable that it would be followed by more activity which would be subsequently followed by praise. Praise would in turn be

		C		A			T		E		G		O		R		Y	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	1							6	2								
	2																	
	3	1							5							2	5	
A	4														1			
	5								1									
T	6								1		1							
	7										1							
E	8	2	1	14	1	1	1		26	1					8	29	1	
	9	2		1	1					2								
G	10				4				14							4	1	
	11																	
O	12																	
	13																	
R	14	1		3					8		1							
	15			1			1		23		8				3	1	2	
Y	16	1						1	2		1				1	3		
	17									1								

Fig. 9

A Matrix to Show Use of the "Coaching" Cycle

(Teacher 10 : Lesson 2 : Observer B)

		C		A			T		E		G		O		R		Y	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	10	1	4			2		22							1	1	1
	2			1														1
A	3			1					48						1	1		
	4								1									
T	5																	
	6		1	4				19	2	1								
E	7	2		2			13	1	2		1					1		
	8	25		26	1		8	1	33		7		9	3	3	10	1	1
G	9																	
	10	1		2			1		3	1					1		1	
O	11																	
	12			2			1		5							2		
R	13	1		2				1						2				
	14	1		1					2									
Y	15	1		2			2		8		1		1	1		2		
	16			3													2	
	17			2					1									

Fig. 10

A Matrix to Show Use of the Question and Answer Dialogue

(Teacher 6 : Lesson 1 : Observer B)

		C		A			T		E		G		O		R		Y	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	3		1					3						2			
	2																	1
	3								40		2						9	
A	4								6							1		
	5																	
T	6	1		2			1	3	1		1						1	
	7			1					1									
E	8	3		27	3		5		29	5	10		11	1	3	5	5	2
	9								2	5	1							3
G	10			9			1		10		8		1		1	2	1	
	11																	
O	12			1	1				7		1				1	1		
	13								1							1		1
R	14			1			1		4						1	1		1
	15			3	2		1		5		1							
Y	16			3	1		1				8		1		1		4	
	17	2	1	3						2								

Fig. 11

A Matrix to Show Use of the Praise and Criticism Cycles

(Teacher 1 : Lesson 2 : Observer A)

CATEGORIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	5 3 *12*		6 1 *8*			4 *3*		12 3 *8*	1 *1*			1 	 *3*	 2 	 *1*	 *1*	2 *1*
2													 *1*				1 1 *1*
3	4 *2*		3 *1*			2 *2*	2 *1*	65 40 *56*		1 2 		 *2*	2 	 	2 *2*	2 9 *5*	
4			 *1*					2 6 *1*					 *1*		1 	 	
5																	
6	2 1 *4*	1 *1*	5 2 *1*	 *1*		2 1 *1*	12 3 *10*	2 1 		1 *1*		 	 *2*	 *2*	1 *1*	 1 *2*	
7	3 *4*		3 1 *5*			4 *2*		3 1 		1 1 *1*		2 	 	 	 	 	
8	14 3 *10*	 *1*	41 27 *34*	2 3 *2*		10 5 *10*		23 29 *19*	 5 	12 10 *11*		6 11 *4*	4 1 *3*	3 3 *12*	25 5 *15*	2 5 	1 2
9	1 							2 1 	5 	1 			1 				3
10	 *1*		7 9 *5*			1 1 *2*		11 10 *11*		3 8 *4*		2 1 	 	 1 *2*	5 2 *1*	2 1 *1*	
11																	
12	1 		1 1 *2*	 1 		 *1*		6 7 *4*		4 1 *1*		2 	 	 1 	 1 	1 	
13	1 *3*		3 *5*			 *3*		2 1 					1 *2*		1 	 	1 1
14	 		2 1 *3*			1 		2 4 *8*		 *3*		 	 *1*	1 2 *2*	1 1 *1*	 	1
15	 *1*		7 3 *4*	2 		1 1 		15 5 *13*		6 1 *4*		2 	 	1 *1*	4 *2*	1 *4*	
16	 		4 3 *2*	1 		1 *1*	 *1*	 		3 8 *3*		 1 *1*	 	1 	2 *4*	4 	
17	1 2 *1*	1 	1 3 	 		1 *1*	 	 	2 	 		 	1 	 	 	 	

Fig. 12 A Matrix for Teacher No. 1

Lesson 1, Observer B; Lesson 2, Observer A; *Lesson 3, Observer B*

followed by activity. It was then possible that the teacher would enter into a question and answer dialogue. This can be expressed in the form of a flow chart (Fig. 13).

SUMMARY

In this chapter various ways of analyzing data, obtained using the observational instrument, have been described. The data collected in the process of testing the objectivity of the observational instrument were used as sample data. Although these data are from a limited, specific sample of teachers the analysis does bring to light information worthy of further study. The analysis also demonstrates the potential of the instrument in enabling an analysis of teacher behavior in elementary school physical education. One teacher could be compared with other teachers. One particular type of lesson of a teacher could be compared to another type of lesson of the same teacher. The implications for future research will be discussed in the next chapter.

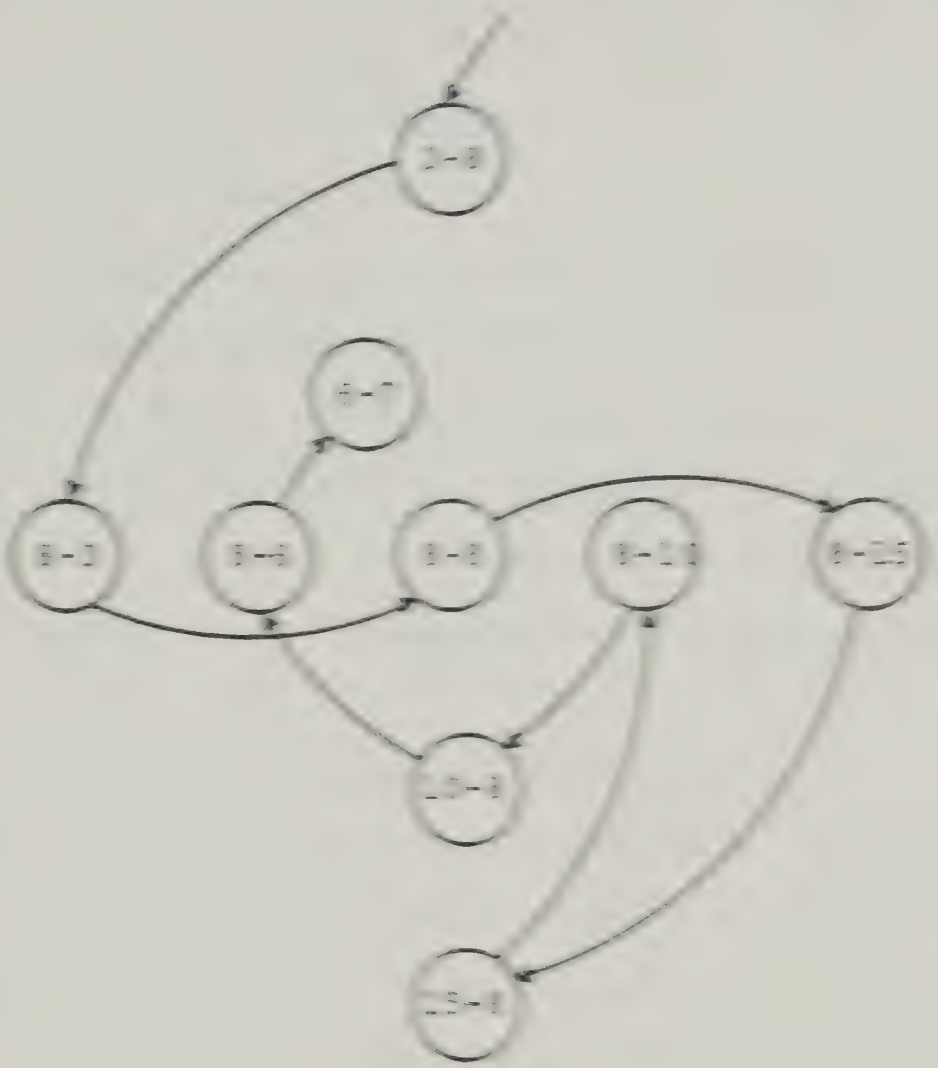

Fig. 11

A Flow Chart to Show the Possible Cycles of Behaviour for Decider 1

CHAPTER 6

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY

The purpose of this study was the development of an observational instrument with which to analyze teacher behavior in elementary school physical education. An integral part of the study was to examine the validity of the instrument, to test its objectivity and reliability, and to describe ways of analyzing and displaying the data collected.

Bellack's pedagogical moves were chosen as the most suitable divisions of teaching behavior in elementary school physical education from a review of research in interaction as related to teaching behavior. Interaction research and current literature related to teaching methods in physical education tended to support the choice of Bellack's pedagogical moves. The Flanders' instrument and procedures were used as the basic model for the development of the observational instrument.

Teacher behaviors in elementary school physical

education were classified according to Bellack's four pedagogical moves from typed transcripts. It was found that all behaviors, except silence or confusion, could be accounted for, as long as the structuring, soliciting, responding and reacting titles were not too rigidly imposed. It was obvious that such a four category system was too gross for a meaningful analysis of teacher behavior to be conducted.

The classified typed transcripts were transposed into lists under each of the four areas. These lists were analyzed and sub-divided. This division produced some 37 sub-divisions which proved to be far too unwieldy for live observation. The sub-divisions were again examined and, in the light of the live observation, compressed into 20 categories. This 20 category system formed the preliminary observational instrument.

The preliminary instrument was sent to a panel of Canadian experts in the area of elementary school physical education. The experts assessed the content validity of the observational instrument based on their experience and expertise. The comments of the panel of experts led to a revised 17 category observational system.

A training manual and procedure was developed. Three experienced physical education teachers, who were pursuing graduate study in elementary school physical

education at the University of Alberta, were trained for 15 to 20 hours as observers.

Ten elementary school teachers, who were teaching physical education, agreed to allow the observers to watch three normal physical education lessons in the gymnasium. The observers, in pair combinations, observed and coded the behaviors in each of the lessons. The coded categories of the two observers for each lesson were compared using Scott's coefficient to give inter-judge agreement or objectivity.

A video-taped lesson was classified into categories by the three observers and the same lesson was re-classified one week later. The recorded categories of each observer from the first observation were compared with the recorded categories of the same observer from the second observation using Scott's coefficient. This gave an estimate of intra-judge agreement or reliability. The data collected from the video-taped lesson were also analyzed for inter-judge agreement.

CONCLUSIONS

It is concluded that, in the light of the 17 category observational system which observed nonverbal as

well as verbal interaction in a live situation, the observational instrument developed in this study reached an acceptable level of inter-judge and intra-judge agreement.

The average Scott's coefficient calculated for inter-judge agreement for the live observations was .82. This was supported by an average Scott's coefficient of .90 calculated for inter-judge agreement using the video-taped lesson.

The average intra-judge agreement, calculated from the coding of the video-taped lesson, was .92.

Flanders, using a ten category system, coding only verbal behavior, and often using audio-tape recordings, suggests that a Scott's coefficient of .85 is acceptable.

The description of ways of analyzing and displaying data, discussed in the previous chapter, indicate the possibilities of using the instrument to analyze and describe teacher behavior in elementary school physical education.

SUGGESTIONS FOR FURTHER RESEARCH

The main purpose of this study was to develop an observational instrument to assist in the analysis and description of teacher behavior in elementary school physical education. The study was planned as a beginning

of an ongoing series of researches. Without a valid, reliable and objective method of observation the study of teacher behavior in elementary school physical education was confined to subjective assessment. The development of the observational instrument without any future research using the instrument and information gathered in the process of this study, although a useful contribution to the body of knowledge in elementary school physical education, would be futile. This section is seen, therefore, as pointing to important directions for future studies.

The central areas of further study according to Anderson (1971) are: to use the observational instrument to acquire large samples of descriptive data which describe what is happening in elementary school physical education; to examine the nature of existing and innovative methods; to use the instrument and the results of descriptive studies as a basis for conducting experimental and evaluative studies; and to utilize the accumulating body of information to enrich teacher education programs.

Certain specific questions arise from this investigation that are worthy of further study.

1. What are the patterns of teaching behavior in elementary school physical education?
2. Are there teaching "cycles" in elementary school physical education?

3. In what situations do particular teaching cycles occur?
4. Do teachers show typical, consistent teaching styles?
5. What are the teaching styles in elementary school physical education?
6. Do teachers change their teaching style from one lesson to another?
7. What factors influence the changes in teaching style?
8. How do teachers differ in their teaching style?
9. Are the inter-teacher differences in teaching style significantly different from the intra-teacher differences?
10. Do teachers use different teaching styles in dance, games and gymnastics?
11. Does the teacher's behavior begin one way (e.g. direct) and gradually change (e.g. become indirect) as the lesson progresses?
12. What are effective teacher behaviors?
13. How could effective teacher behaviors be developed in teacher training programs?
14. Do "good" teachers show significantly different teaching behavior from other teachers?
15. Are there differences in teaching behavior when comparing "traditional" programs with

"new" programs?

16. Is there a difference between English Movement Education and American Movement Education in terms of teaching behavior?
17. Can teaching behavior be modified by an awareness of the various teaching strategies?
18. Is teaching behavior related to the length or amount of teacher training?
19. What is the effect of training in the use of the observational instrument on the teaching behavior of student teachers?
20. What is the effect of inservice training on teachers' behavior in elementary school physical education?
21. What is the effect of micro-teaching in which a student teacher consciously attempts to increase or decrease the use of particular categories within his teaching behavior?
22. Can the observational instrument be used, profitably, in other environments (e.g. swimming pool or playing field)?
23. Can the observational instrument be modified for use in observing and analyzing junior high school or senior high school physical education?

24. What effect does the frame of reference filter play on interaction in the elementary school physical education?
25. How do a teacher's intents match with his actions?
26. What is the effect of particular teaching behavior on the individual development of pupils?
27. Could a simplified category system be used for "on the spot" observation and analysis of teaching behavior?
28. How is question and answer dialogue used in elementary school physical education?
29. How is demonstration used in elementary school physical education?
30. How do teachers use structuring behavior in elementary school physical education?

If the future use of the observational instrument can provide answers to some of these questions this study will have been worthwhile.

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A P P E N D I X A

A SAMPLE OF A COLOR CODED TYPESCRIPT OF A LESSON

GYM 1

Activity (Response)

Good Vonne, that's it! (Reacting)

Activity (Response)

See if we can find different ways. (Reacting)

Activity (Response)

Stop. (Soliciting)

Activity (Response)

Let's watch Stephen. (Soliciting)

Activity (Response)

Let's look at Christine. (Soliciting)

Activity (Response)

What do you notice about Stephen's feet and Christine's feet? (Soliciting)

Stephen one foot, Christine two feet (Response)

Try to see if you can use one foot or two feet (Reacting)

Activity (Response)

Good. (Reacting)

Activity (Response)

Stop. (Soliciting)

Activity (Response)

Jump on the spot. (Soliciting)

Activity (Response)

DANCE 11

Hello, again. (Structuring)

Come and sit down. (Soliciting)

After last lesson did you go away and work on the things we did last day? (Structuring)

Well, we worked on ... (Structuring)

We will show you what we did. (Structuring)

Stand up straight. (Soliciting)

Activity (Response)

Stick your knees out. (Soliciting)

Activity (Response)

Can you see your feet? Are the bottoms dirty? (Soliciting)

Activity (Response)

See if you can jump and see them behind you. (Soliciting)

Activity (Response)

Let's listen to the music. (Soliciting)

Activity (Response)

That's the first part. (Structuring)

Spread out. (Soliciting)

Activity (Response)

Are you ready? (Soliciting)

Activity (Response)

Knees .... feet. (Reacting)

Activity (Response)

A P P E N D I X B

EXAMPLES OF STATEMENTS OR ACTIONS CATEGORIZED INTO FOUR AREAS

STRUCTURING

I am going to ask you to get a hoop and put it on the floor.

I want each of you to do something special.

This time I am going to change the length of time for which I beat.

Good morning, have you been doing a lot of the activities that we did last day?

Last week we worked on curling and stretching. Now today we have been using different action words. We have been using gallop, creep, crawl, spin, explode, and collapse.

Next week we will use the words and also some music.

This group is going to get out the climber, this group will get out the box horse, this group will get a spring-board and mat ... .

SOLICITING

Stop!

Go!

Travel some place.

Up on your feet!

Show me how you can travel on your feet!

SOLICITING (Continued)

On the spot where you are choose one part and get it as high as you can!

See how many parts you can lift high!

Away you go!

Jump on the spot!

Jump into and out of the hoop!

Can you show me how many parts you can use?

Show me a part really high and a part really low!

What will you do when I call out?

How many have worked on the climber?

You get a mat!

I want this group, here, to jump and roll on the mat.

What's your name, son?

Did you hear that?

When you hear a bang I want you to freeze. Bang, Bang, Bang, BANG!

Left, right - STOP!

If I came along and pushed you, would you fall over?

Take a hoop and carry-on working.

RESPONSE

It is difficult to write about the pupils' responses

as these are usually nonverbal movements. A long list of specific activities could be given but only a few examples will be cited.

Jump

Wide jump

Handstand

Headstand

Cartwheel

Balances

Running

Catching

Throwing

Kicking

There are also many unnamed activity responses.

Verbally, sometimes using gesticulation, pupils answer the teacher's questions.

I think that it is better to stop with the feet apart.

I like John's jump because it is so high and he lands so quietly.

I feel as if Mary's movements are showing that she is sad.

They are slow and floppy.

Pupil's initiated questions and activities.

How can I jump higher?

REACTING

Remember the landing.

There are a couple of things about landing that you must remember.

Keep the hoops still!

Pay attention!

Listen once more!

It's not very clear to me which group you are sitting in!

Watch where you are going!

Joel has his hands only, Mary has hands and head.

Can you stay up a little longer?

Watch where you are aiming.

Point your toes as you kick the ball.

Can you use a different part of your foot?

Spread your hands.

Quite still!

I'm disappointed with you, son!

Still land softly!

Stretch that tummy up.

See if you can find different ways of rolling.

That's it, _____!

Good!

Good, that was very nice!

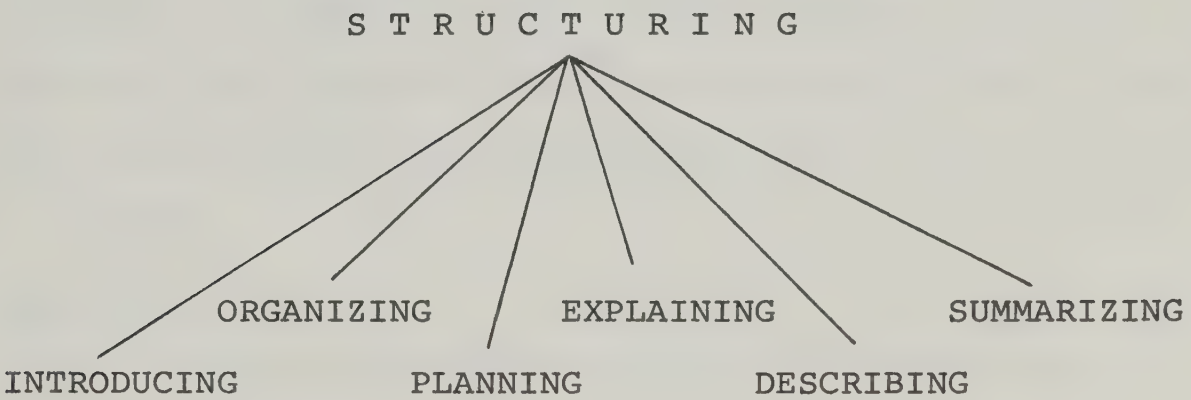
Yes, I like the way that you stretched your legs.

A P P E N D I X C

DESCRIPTION OF THE CATEGORIES IN THE PRELIMINARY OBSERVATIONAL INSTRUMENT

STRUCTURING

Structuring behavior by the teacher is lecturing, organizing, introducing behavior used to give information, facts, ideas or orientation to the students.



The section is divided into two categories. Category 1 deals with physical education centered lecturing behavior. Category 2 includes non-physical centered lecturing behavior.

The question which these categories allow the researcher to explore, is how much of the verbal behavior in a given lesson is controlled by the teacher "talking about the lesson" and school organization as opposed to that verbal behavior which allows for the teacher and the pupil actually to engage in interactive behavior aimed at the pupils' acquiring skills or abilities in the physical education area.

Category 1. Physical Education Centered Teacher Lecturing Behavior

Teacher behavior directly related to the Physical Education lesson but not intended to solicit an overt response from the pupils nor to be a reaction to pupils' responses is classified under this category. The category includes teacher behavior which introduces, describes, explains and summarizes the lesson content. It also includes any behavior that is specifically organizational or planning and which is not phrased as a directive or as a question.

EXAMPLES:

1. Today we are going to work on different ways of travelling.
2. We have been working on different ways of taking out our weight. Next lesson we are going to use what we have learned today and begin working with a partner.
3. We are going to divide into groups and each group is going to work with a different piece of equipment.
4. When you stop, it is important to spread your feet apart to give a larger base of support. If you bend your legs it lowers your center of gravity so making you more stable.
5. Next time you stop, stop with your feet apart. This would not be category 1, as it is intended to solicit a

response from the pupils.

Category 2. Non-physical Education Centered Lecturing Behavior

Any teacher behavior that is not related to the physical education lesson should be recorded as non-physical education teacher behavior. All of the observed teacher behavior in a physical education class would not be specifically related to physical education; the teacher may call roll, give general announcements, talk to another teacher or pupil not related to the lesson, etc. This category would give some idea of the proportion of time spent on non-physical education behavior.

EXAMPLE:

"The principal has asked me to announce that those in the school play will have a practice tonight."

TEACHER SOLICITING BEHAVIOR

These teacher behaviors are intended to elicit responses from the pupils (or pupil). In order to be classified in these categories the teacher behavior must:

A. Expect the pupils to respond.

B. Be an independent or new task.

If the behavior is an extension or a development of a

previous directive it should be categorized under one of the teacher shaping categories. The behavior should be an initiation as perceived by the students. If it is perceived by the pupils to be a reaction to a response it should be categorized elsewhere.

The directives are categorized by the degree of teacher control that is exercised, by statement or implication, over the response of the students.

Directives in elementary school physical education can relate to the following aspects of movement:

Body action

Body parts

Body shape

Space

Direction

Level

Speed

Strength

Relationships

Equipment

The control that the teacher exercises by the phrasing of the task will determine into which category the teacher behavior will fall. NOTE: There are at least two factors that will determine into which category the directive is placed:

1. Phraseology: Terminology (this has been

discussed on the previous page)

2. Implication: Although the teacher may appear to leave some degree of freedom in aspects of movement if the pupils perceive limitations, from the environment or previous experiences, the directive must be classified accordingly, for example:

RUN	AROUND	THE GYM
(Body Action)	(Direction)	(Space)
Specific	may imply circular	

If the pupils perceive this task as the speed and direction of running being of their choice, as evidenced by the different speeds of running and the different pathways taken by the pupils, the teacher behavior should be classified under the limiting directive category 3.

If, however, through previous experiences the pupils perceive the task to mean -follow each other at the same speed in a circle around the gymnasium- the teacher behavior should be classified as a command directive 2.

The specific categories are described as follows:

Category 3. Command, Authoritarian, Directive

Complete control over the pupils' response is exercised by the teacher. The directive is phrased in such a

way that only one response is possible.

EXAMPLE:

Stand up!

Show me a handstand!

Category 4. Limiting or Restricting Directive

The teacher limits the pupils by still exercising some degree of control. In order to be classified as a limiting directive the task must (a) leave up to two of the aspects of movement uncontrolled and (b) more than one response must be possible.

EXAMPLE:

Show me a balance on your hands and feet.
(Action) (Body Part)

The action and body parts are restricted but the level and shape of the body are left free to the child's imagination. More than one response is possible.

Category 5. Open or Free Directive

If (a) three or more aspects of movement are left uncontrolled the teacher behavior is classified as open or free (b) many responses are possible.

Category 6. Interjecting Directive

If the teacher gives a directive while the children are still working it should be classified under this category.

In this way a more accurate account of participation by the pupils can be kept.

EXAMPLES:

Spread out!

Change from throwing at the target to kicking at it.

Category 7. Teacher Questioning

The teacher asks a question about content or procedure with the intent that one or more students answer with either a verbal or physical activity response.

EXAMPLES:

Is it better to stop with your feet together or apart?

Which foot should you have forward when throwing a ball?

Who can explain to me the difference between John's and Mary's dances?

Can you run and jump this rope?

Can you show me four balances?

Who can climb the bench?

PUPIL RESPONSE

This section contains responses by the students. It is sub-divided into three categories. Category 8 is pupils' verbal responses, category 9 pupils' physical

education activity response and category 10 any initiating actions by a pupil(s).

Category 8. Pupils' Verbal Response

Any time one or more pupils answer a teacher question verbally the response is classified under this category. The category also includes a physical response which is a substitute for a verbal answer. For example, nodding the head is a substitute for "Yes", shaking the head is a substitute for "No". These would fall under this category rather than the following category which is reserved for physical education type of activity only.

EXAMPLES:

Question: "Is it easier to stop with your feet together or with your feet apart?"

Answer: "Feet apart."

Question: "Why do you think this is so?"

Answer: "Because the base is bigger with your feet apart."

Category 9. Pupil Activity Response

Whenever a pupil responds to a teacher directive or teacher question with physical activity then the response should be recorded under this category. This should be a specific activity response rather than a gesture accompany-

ing a verbal response or a gesture replacing a verbal answer. For example, shaking the head instead of saying, "No", should not be classified under this category. It would be classified under the previous category.

EXAMPLES:

Locomotive activities

Balancing activities

Curling, stretching

Work on or with apparatus

Twisting, turning

Throwing

Catching

Information as to the appropriateness of the response (at least as perceived by the teacher-pupil) may be explored by examining the types of teacher reactions which follow the pupil responses.

Category 10. Pupil Initiating Action

If a pupil, of his own volition, initiates interaction with the teacher, the pupil behavior is classified as category 10. Although this pupil action may be an indirect response to the environment it must not be a direct response to any teacher behavior. Such response behavior is categorized 8 or 9.

EXAMPLES:

1 (a) The pupils are running. One pupil asks, "How

can I change direction suddenly?" (Category 10)

(b) If, however, the children are working on stopping and starting and a pupil asks, "How can I stop more quickly?" this is a response to the teacher solicitation and should be categorized 8. Pupils' verbal response.

2 (a) The pupils are working on a task and a pupil(s) does something not connected specifically to the task but the teacher accepts the action and uses it to develop the next task.

(b) If the teacher uses an action to develop the lesson but the action was a response and therefore related to the previous task. The pupils' action should be classified as category 9 and the following teacher behavior classified under one of the teacher reaction categories.

TEACHER REACTING BEHAVIOR

Teacher reactions to the responses are categorized in this section. This type of teacher behavior is often referred to as "coaching" in physical education. (Bilbrough and Jones)

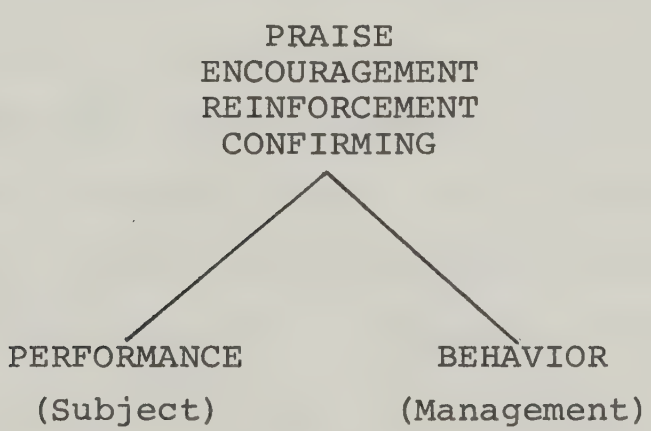
Reactions by the teacher are subdivided into the

following areas: teacher confirming reactions; teacher correcting reactions; teacher extending and focussing reactions; and finally demonstration.

TEACHER CONFIRMING REACTIONS

Teacher behavior which accepts, praises, reinforces, confirms or in any other way indicates that the pupils' or pupil's response is acceptable should be coded under one of these two categories. Further useful information could be obtained by dividing the teacher's confirming reactions into performance (or subject) confirming reactions and behavior (or management) confirming reactions.

TEACHER CONFIRMING REACTIONS



Short responses such as "Good!", "Yes!", "O.K.", "Uh, Uh!" should be recorded as teacher confirming reactions.

Category 11. Teacher Confirming Performance Reactions

Performance is subject (physical education) based on activity which is executing or carrying out the task (solicitation) set by the teacher.

EXAMPLES:

Response: A pupil performing a handspring.

Reaction: "Well done, John."

Response: A pupil playing a game makes a good pass.

Reaction: "Atta boy, Jim."

"Good, Mary, I like the way you stretched your leg in the balance! Your toes are pointed very nicely, good!"

Category 12. Teacher Confirming Behavior Reactions

Behavior refers to the general deportment, propriety, manners of the pupils as well as the way they treat others.

Although category 12 does not seem to occur very often in the observed lessons it is considered worthy of consideration from a theoretical standpoint and as a technique which should be encouraged. Traditionally discipline in schools has been corrective. In the light of Skinner's work in "operant conditioning" and "shaping", unwanted responses should be ignored and desirable responses (behavior) praised and confirmed. This positive

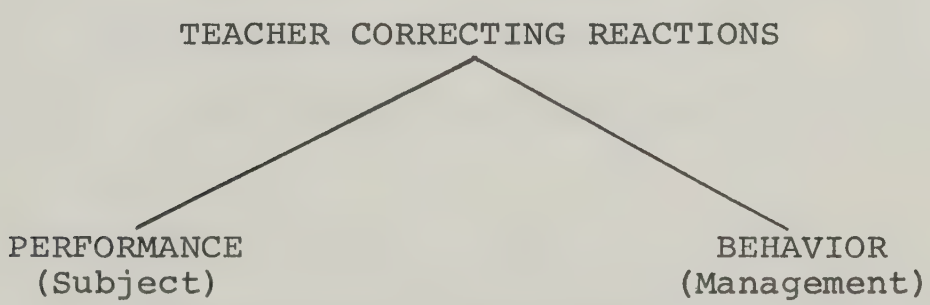
response to good behavior may be more beneficial than the more common corrective behavior responses.

EXAMPLE:

A boy who had been interfering with other children, calling out and making a noise, while the teacher is carrying out structuring behavior, starts to sit quietly and listen. The teacher confirms this -- "Good boy, James!" Category 12.

TEACHER CORRECTING REACTIONS

Reactions by the teacher which indicate to the pupil that his response or lack of response is unacceptable should be recorded under these categories. Useful information with respect to the time spent correcting the activities (performance) of the children as compared to time spent in management (correcting behavior).



If further information on such things as the way

the correcting was carried out subscripting categories 12 and 13 into such parts as, correction without rejection and correction with criticism etc. would be necessary.

Category 13. Teacher Correcting Performance Reactions

The teacher is indicating to the pupil or pupils that their response(s) to the task (solicitation) is/are not acceptable.

EXAMPLE:

"Children! That's not right! I asked you to balance on two parts and most of you are balancing on three parts!"

"Mary! You can jump better than that!"

Category 14. Teacher Correcting Behavior Reactions

The teacher is correcting the general deportment of the class or of a particular pupil.

EXAMPLE:

"Class! Pay attention!"

"You are making too much noise!"

"John! I am disappointed with you!"

TEACHER EXTENDING AND FOCUSSING REACTIONS

A reaction by the teacher with the intention of

helping the pupil(s) to improve, clarify, modify, or add to his (their) response(s) falls under one of these categories.

General "shaping" reactions by the teacher may be subdivided into:

a) reactions that are intended to extend the pupils' performance (i.e. to develop a variety of pupil responses). The development of an initial task or solicitation would be classified as extending.

EXAMPLE:

Balance on your hands and feet. -- SOLICITATION
While you are balancing on your hands and feet try to put your seat upwards sometimes and at other times put your stomach upwards. -- EXTENSION
Find another way of balancing on your hands and feet. -- EXTENSION

b) reactions that are intended to focus attention on one particular aspect of the response (i.e. to develop quality (skill) of the performance).

EXAMPLE:

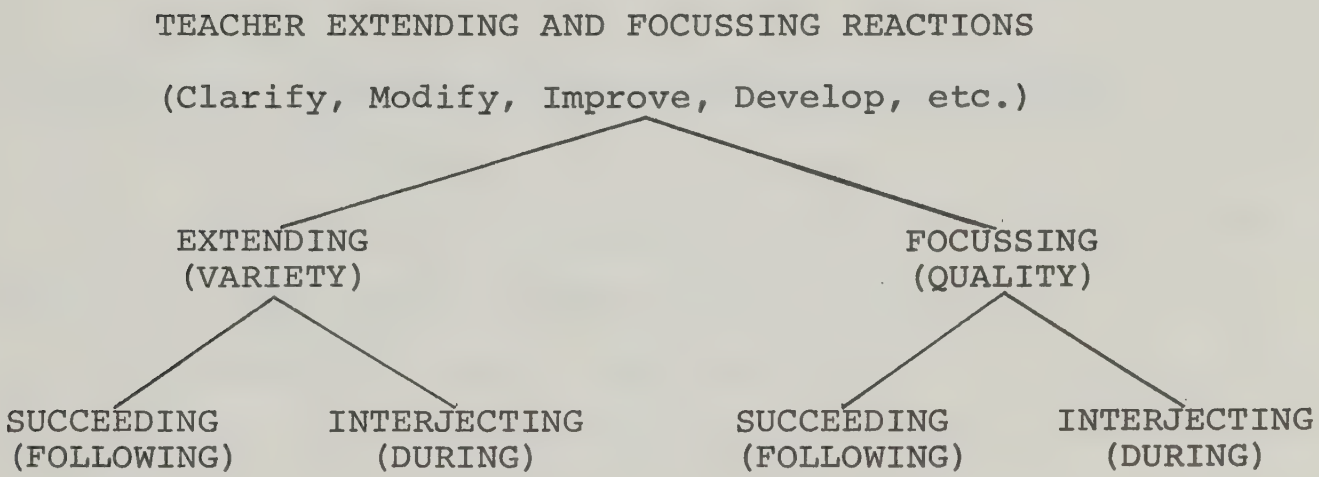
Mary, concentrate on stretching your legs. -- FOCUSSING.

These reactions may be:

i) made while the pupils are still and watching and listening to the teacher -- Succeeding the response.

or

ii) general or specific comments which are interjected while the pupils continue working. Subdividing in this way will give a more accurate record of the actual time that pupils are participating practically.



Category 15. Teacher Extending Reactions Succeeding Response

The teacher is attempting to add to, vary the response(s) of the pupil(s). The category will usually be used when the teacher talks to the whole class. The reaction follows the pupils' response.

EXAMPLE:

Directive: "Stop!"

Reaction: "You have been travelling on your feet. Now sometimes use just one foot and sometimes two feet."

Category 16. Teacher Extending Reactions, Interjecting

The teacher attempts to extend the pupils' response while they are still working.

EXAMPLE:

"Sometimes travel forwards, sometimes backwards."

"Sometimes high, sometimes low."

Category 17. Teacher Focussing Reactions Succeeding Response

After the pupils' response, with the class stopping activity, the teacher focusses the children's attention on any one particular aspect. The teacher is trying to develop the quality (skill) of the performance (response).

EXAMPLE:

Directive: "Look this way everyone."

Reaction: "As you are jumping try to land very softly."

Category 18. Teacher Focussing Reactions, Interjecting

The teacher is focussing the children's attention on a particular aspect of the performance (response) while they are still working.

EXAMPLE:

Keep your head up!

Stretch those toes!

Category 19. Demonstration

If the teacher, a child or a group of children perform an activity for the rest of the class this should be classified as a demonstration. The performance may have the purpose of illustrating, clarifying, extending, or of focussing on particular aspects of the task (solicitation) or of the response(s).

The area of demonstration is of importance in the physical education lesson. In this study it is considered necessary to group all types and purposes of demonstration under the one category. If specific information as to the use, type, and purpose of demonstration is required, further subscripting would be necessary.

OTHER

Category 20. Silence or Confusion

The silence or confusion category should be recorded for every three seconds of silence except when the pupils are responding actively. It should also be recorded if there is so much unproductive activity going on that it is impossible to analyze the interaction.

Caution: Physical activity usually causes some noise. This should not be categorized as confusion unless it is unproductive.

A P P E N D I X D

INTRODUCTORY LETTER TO PANEL OF EXPERTS

Faculty of Physical Education,
The University of Alberta,
Edmonton 7, Alberta, Canada,
September 23, 1972.

For my dissertation I am working on the development of an instrument to facilitate the observation and recording of teacher behavior in elementary school physical education, specifically in the gymnasium. My reasoning is that if we can more fully describe teacher behavior, perhaps we will be able to modify more effectively the behavior of student teachers and practising teachers.

The observational instrument is based on current models of teacher behavior. There is no intention of conveying a value position to specific items in the instrument. This might be the subject of further research. The intention is to describe what is happening at the present time.

The instrument is based on the teaching cycles as described by Bellack, who analyzed teacher behavior in the classroom. All statements and actions that occur in the gymnasium are categorized into one of five major sections: - 1. Structuring behavior by the teacher; 2. Soliciting behavior by the teacher; 3. Response by the students; 4. Reactions by the teacher; and 5. Silence or confusion.

The observation procedure is based on the Flanders interaction analysis system.

Categories which describe aspects of teacher -pupil interaction are learned by observers who watch a lesson and record the number of a category as that behavior occurs. In this way a permanent, objective record is made of the lesson. For a full description of the lesson other observations must be made. Interaction analysis does not intend to give a complete picture but should offer some useful information that is at present unavailable in elementary school physical education teaching.

The recorded categories are entered into a matrix - the Flanders system uses a 10-row by 10-column table. The matrix is a means of displaying data so that the original sequence of events is preserved in a meaningful pattern. It helps to reconstruct the original event as nearly as possible and enables certain facts to become readily apparent.

My review of research has indicated that observers can only manage from fifteen to twenty categories in such a system with reliability and objectivity. The categories, therefore, are somewhat gross and cover the key behaviors. If more specific information is required about a particular area, that category will have to be subdivided or subscripted. For example, if it is found that teacher questioning plays a significant part in elementary school physical education, a further study might be conducted to explore the specific types of questions and the usage of questions in a lesson.

The intention of this study is (a) to develop an observational instrument to describe what goes on in elementary school physical education, (b) to test the validity of the instrument, (c) to estimate the reliability of the instrument, (d) to examine the objectivity of the instrument and finally (e) to make some tentative suggestions with respect to the results.

I have developed the following observational categories from current literature on elementary school physical education, from my own observations in gymnasia and from interaction with other physical educators.

I am writing to you and other experts in elementary school physical education, in order to validate the instrument. I would be extremely grateful if you could find the time in your busy schedule to complete the attached questions based on your experience. I would be grateful for your reply by the 15th October, 1972.

I hope that this will contribute to our knowledge of teaching physical education in the elementary school.

Yours sincerely,

STUART ROBBINS,
Assoc. Prof.

/ag
Encl.

A P P E N D I X E

QUESTIONNAIRE TO THE PANEL OF EXPERTS

No: _____

POSITION: (Please circle)

SCHOOL UNIVERSITY SUPERVISOR CONSULTANT

Please indicate, from your experience, your reactions to the observational instrument. I would appreciate your comments to the questions, especially if you indicate a "NO" [x]

1. Do the categories adequately describe what goes on (should go on) in the elementary school physical education?

   Yes ☐ No ☐

   COMMENTS:

2. Are there incidents that occur (could occur) that are not included?

   Yes ☐ No ☐

   COMMENTS:

3. Are there categories that are redundant?

   Yes ☐ No ☐

   COMMENTS:

4. Are there categories that are repetitive? (Do two or more categories classify the same thing?)

Yes ☐ No ☐

COMMENTS:

5. Are the definitions of each category clear?

Yes ☐ No ☐

COMMENTS:

6. Are the definitions exclusive? Could teacher behavior be put into one category rather than another?

Yes ☐ No ☐

COMMENTS:

7. Are the categories confused?

Yes ☐ No ☐

COMMENTS:

OTHER COMMENTS:

A P P E N D I X F

A MANUAL FOR TRAINING OBSERVERS

A MANUAL FOR TRAINING OBSERVERS IN THE USE OF AN OBSERVATIONAL INSTRUMENT WITH WHICH TO ANALYZE ELEMENTARY SCHOOL PHYSICAL EDUCATION

CONTENTS

INTRODUCTION	Description of Interaction Analysis Category System
	Procedure for Observation
ASSIGNMENT ONE	Learn Sections. Structuring, Soliciting, etc. Quiz on Sections.
ASSIGNMENT TWO	Diagrammatic breakdown of categories
	Learn Categories
	Specific quiz for each category
	General quiz for all categories
ASSIGNMENT THREE	Categorize Transcript of Lesson
	Check Category Nos. against key. Revise definitions of any categories classified wrongly. Do not proceed until satisfied that you have a good grasp of all the categories.
ASSIGNMENT FOUR	Categorize Transcript of Lesson
	Check Category Nos. against key. There should be no wrongly classified behaviors at this stage.
ASSIGNMENT FIVE	Live Observation

INTRODUCTION

The object of this training manual is to introduce observers to a system of analyzing teacher behavior in elementary school physical education. It is anticipated that an observer will need between 10 hours and 20 hours training to be able to record the categories reliably, objectively and confidently. It is imperative that the observer be adept at coding behaviors in the gymnasium into one of the 17 categories accurately. If this is not done all of the observation that follows will be worthless.

INTERACTION ANALYSIS

There are many systems of analyzing classroom interaction. These are called interaction analysis systems. They are means of transferring transient happenings into preservable data from which a study of the previous happenings may be made. Inevitably in classifying any information into a category some of the uniqueness of that information is lost. In designing an interaction analysis system a research must ensure that the key information is retained so that meaningful observations may be made when the data is reviewed. An interaction analysis system does not, indeed cannot, enable the researcher to completely reconstruct the observed lesson. In order to do this a great deal of other information

would be necessary. Interaction analysis is not, therefore, the "cure-all" for teaching but rather a method of focussing attention on one particular aspect of the interaction that takes place.

One of the most well known systems is the Flanders System. This system is concerned with the amount of freedom the teacher grants to the student as exemplified in verbal interaction.

The system described in this manual is directed at teacher behavior in elementary school physical education.

> Each system (of interaction analysis) is essentially a process of encoding and decoding, i.e., categories for classifying statements are established, a code symbol is assigned to each category, and a trained observer records data by jotting down code symbols. Decoding is the reverse process: a trained analyst interprets the display of coded data in order to make appropriate statements about the original events which were encoded, even though he may not have been present when the data were collected. A particular system for interaction analysis will usually include (a) a set of categories, each defined clearly, (b) a procedure for observation and a set of ground rules which governs the coding process, (c) steps for tabulating the data in order to arrange a display which aids in describing the original events, and (d) suggestions which can be followed in some of the more common applications. (Flanders, 1966, p. 29).

The present category system is designed for use in the gymnasium in situations in which both the students and the teacher are involved in verbal or physical interaction. It is inappropriate when either the teacher or

the pupils are involved in long periods of lecturing or activity in which there is no response from the other party. For example (i) the students are playing a game of volleyball in which the teacher is refereeing, (ii) the students are working in groups and the teacher only makes very infrequent comments.

The system is not designed to detect play acting or deception. It is important that the situation be as normal as possible if meaningful, constructive information is to be derived.

Observation systems in general and the system described in this manual in particular are not designed to evaluate or give the teacher a rating. They are designed to help reconstruct what actually occurred in the observed session. They may assist in comparing the actual intentions of the teacher with the effects on the pupils or on the situation.

TRAINING

The objective of a training procedure is to attempt, in as far as possible, to make men machines and to keep them that way while they are observing.

> The ideal observer team is a number of like-minded individuals who will respond consistently with the same category number when presented with the same communication events. (Flanders, 1966, p. 9).

PROCEDURE

The observer places himself in the gymnasium in the best position to see and hear the teacher and the students. It is suggested that if there is a stage that this is a suitable position and will give a panoramic view of the whole gymnasium. In situations where there is no stage a position in one corner will possibly give the best view. The observer may need to change positions from time to time in order to be in the most advantageous position to see and hear the teacher and the students. For example, in group work if the teacher moves to the far end of the gymnasium to give some coaching the observers may need to move in order to be able to categorize the interaction.

It is important for observers to realize that their presence is bound to have an effect on the interaction of the lesson and any movement by them might emphasize their presence. Movement by the observers in order to gain a better perspective must be carefully weighed against the disadvantages that the movement itself might have.

The observer watches the interaction in the gymnasium and decides which category best represents the event just completed. This number is recorded while the observer simultaneously assesses the next behavior. The

observer records the most appropriate category number at each change in behavior. This pattern is continued throughout the lesson. The numbers are recorded sequentially either on a drum revolving at a known speed or on a tape recorder with a known r.p.m.

Notes must be made of any unusual happenings or behaviors, for example, if an accident occurs the pattern of interaction will be drastically effected. At a major change in the structure of the class a notation should be made of the change, for example, if the activity changes from class activity to group activity. After the lesson the observer should add to the notes already made by recording the type of activities occurring in each segment of the lesson and any additional facts that may assist in a fuller interpretation of the lesson at a later date.

The observer must not attempt to second guess the intent of the teacher. He should try to place himself in the situation and judge how the teacher's behavior effected the children.

> ..., he is not necessarily concerned with the conscious intent of the teacher. In fact, what the teacher has in mind when he communicates with the students may be inconsistent with the observer's judgement of intent that is made within the limited number of categories available. (Flanders, 1966, p. 2).

ASSIGNMENT ONE

Read the following.

Teaching has been divided into five major sections:

1. Structuring or lecturing type behavior
2. Soliciting or eliciting type behavior
3. Response behavior
4. Reactions to the responses
5. Silence or confusion

Answer the following questions:

Into which sections would the following be classified?

1. A teacher directing children.
2. A child answering a question.
3. A teacher coaching a child.
4. Children balancing on hands and feet.
5. Teacher talking about the olympics.

Ans. 1 - Soliciting, 2 - Response, 3 - Reacting,
4 - Response, 5 - Structuring.

ASSIGNMENT TWO

Read the following description of the categories.

Diagrammatically the categories can be explained as follows:

Structuring	1. Physical Education Centered	
	2. Non-physical Education Centered	
Soliciting	3. Direct or Command	
	4. Limiting	
	5. Free	
	6. Questioning	
Responses	7. Verbal	
	8. Nonverbal Physical Education Activity	
	9. Initiating	
Reacting	Praise (confirming)	10. Performance
		11. Behavior
	Criticism (correcting)	12. Performance (rejecting)
		13. Behavior
	14. Extending (variety)	
	15. Focussing (quality)	
	16. Demonstration	
Silence or Confusion	17.	

ASSIGNMENT THREE

Learn the categories and develop an understanding

of the content of each category.

Cover the numbers and learn to identify each behavior with the number of a category. In live observation the behavior is observed and is then coded. In practise try to repeat this pattern. Before moving on to the next assignment, you should be able to give the category for a behavior immediately. The more certain you are of the categories and definitions of the categories at this stage the easier will be the rest of the classification.

Answer the following questions:

1. Reactions by the teacher would be classified under a code number from _____ to _____.
2. Silence or confusion requires the code number _____.
3. When a pupil is responding you select code numbers _____.
4. Structuring or lecturing type behavior requires a code number of _____ or _____.
5. If a teacher is soliciting a response from pupils you select a code number from _____ to _____.
6. When a teacher praises one or more pupils the two code numbers are _____, _____.
7. When a teacher attempts to focus the child's attention on a particular aspect of his per-

formance, the code number is ____.

8. When a teacher tries to extend the performance of one or more pupils, the code number is ____.
9. If the teacher demonstrates the code number is _____.
10. What code number is used if one or more pupils answer a teacher's question verbally? _____.
11. What code number is used if one or more pupils answer a teacher's question with physical activity? _____.

Ans. 1) 11 - 16
2) 17
3) 7, 8, 9
4) 1 - 2
5) 3 - 6
6) 10, 11
7) 15
8) 14
9) 16
10) 7
11) 8

Learn the following categories and definitions.

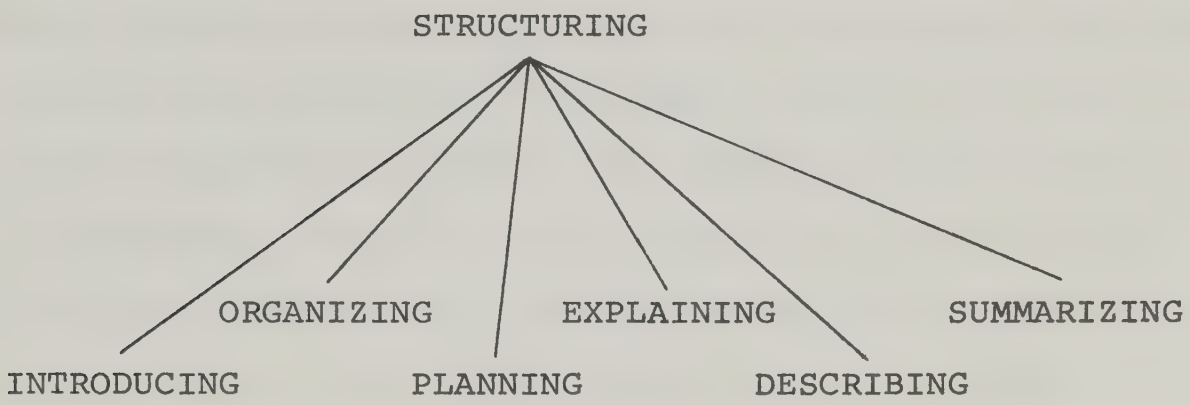
CATEGORIES FOR OBSERVING TEACHER BEHAVIOR

IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

TEACHER STRUCTURING	1. Physical education centered structuring type behavior
	2. Non-physical education behavior
TEACHER SOLICITATION	3. Command, authoritarian directive
	4. Limiting, restricting directive
	5. Open, free directive
	6. Teacher questioning
PUPILS' RESPONSE	7. Pupils' verbal response
	8. Pupils' activity response
	9. Pupils' initiating action
TEACHER REACTING	10. Confirming performance reactions
	11. Confirming behavior reactions
	12. Correcting (rejecting) performance reactions
	13. Correcting behavior reactions
	14. Extending reactions
	15. Focussing reactions
	16. Demonstration
OTHER	17. Silence or Confusion

STRUCTURING

Structuring behavior by the teacher is lecturing, organizing, introducing behavior used to give information, facts, ideas or orientation to the students.



The section is divided into two categories. Category 1 deals with physical education centered structuring behavior. Category 2 includes non-physical education centered structuring behavior.

The question which these categories allow the researcher to explore, is how much of the verbal behavior in a given lesson is controlled by the teacher "talking about the lesson" and school organization as opposed to that verbal behavior which allows for the teacher and the pupil actually to engage in interactive behavior aimed at the pupils' acquiring skills or abilities in the physical education area.

Category 1. Physical Education Centered Structuring Behavior

Teacher behavior directly related to the Physical Education lesson but not intended to solicit an overt response from the pupils nor to be a reaction to pupils' responses is classified under this category. The category includes teacher behavior which introduces, describes, explains and summarizes the lesson content. It also includes any behavior that is specifically organizational or planning and which is not phrased as a directive or as a question. The introducing, explaining, describing or summarizing talk of the teacher may well serve to motivate the children or produce overt responses. If this category proves to form a significant part of teaching technique in elementary school physical education the category could be subdivided to provide more precise information as to the type of structuring behavior that teachers used.

Examples:

1. "Today we are going to work on different ways of travelling."
2. "We have been working on different ways of taking out our weight. Next lesson we are going to use what we have learned today and begin working with a partner."

3. "We are going to divide into groups and each group is going to work with a different piece of equipment."
4. "When you stop, it is important to spread your feet apart to give a larger base of support. If you bend your legs it lowers your center of gravity so making you more stable."
5. "Next time you stop, stop with your feet apart"

would not be category 1, as it is intended to solicit a response from the pupils. Statements such as 4 above (category 1) may well be followed by a directive, e.g. statement 5 above.

Category 2. Non-Physical Education Centered Structuring Behavior

Any teacher behavior that is not related to the physical education lesson should be recorded as non-physical education teacher behavior. All of the observed teacher behavior in a physical education class would not be specifically related to physical education; the teacher may call the roll, give general announcements, talk to another teacher or pupil not related to the lesson, etc. This category would give some idea of the proportion of time spent on non-physical education behavior.

Example:

"The principal has asked me to announce that those in

the school play will have a practice tonight."

TEACHER SOLICITING BEHAVIOR

These teacher behaviors are intended to elicit responses from the pupils (or pupil). In order to be classified in these categories the teacher behavior must:

A. Expect the pupils to respond

B. Be an independent or new task

If the behavior is an extension or a development of a previous directive it should be categorized under one of the teacher shaping categories. The behavior should be an initiation as perceived by the students. If it is perceived by the pupils to be a reaction to a response it should be categorized elsewhere.

The directives are categorized by the degree of teacher control that is exercised, by statement or implication, over the responses of the students or, stated another way by the amount of freedom that is given to the pupils.

Directives in elementary school physical education can relate to the following aspects of movement:

Body action

Body parts

Body shape

Space

Direction

Level

Pathway

Speed

Strength

Control

Relationships

The control that the teacher exercises by the phrasing of the task will determine into which category the teacher behavior will fall. NOTE: There are at least two factors that will determine into which category the directive is placed:

1. Phraseology: Terminology (this has been discussed above)
2. Relationship between the task and the theme of the lesson: The amount of freedom possible for the students within any task may be limited or restricted by the theme of the lesson. For example: "Show a balance." may seem to allow a great amount of freedom of choice in such things as the part of the body on which to balance, the shape of the body, the level of the balance etc. If, however, the theme of the lesson was stretched and curled, a further limitation would have been imposed on the pupils.

3. Implication: Although the teacher may appear to leave some degree of freedom in aspects of movment if the pupils perceive limitations, from the environment or previous experiences, the directive must be classified accordingly, for example:

RUN	AROUND	THE GYM
(Body Action)	(Direction)	(Space)
Specific	may imply circular	

If the pupils perceive this task as the speed and direction of running being of their choice, as evidenced by the different speeds of running and the different pathways taken by the pupils, the teacher behavior should be classified under the limiting directive category 4. If, however, through previous experiences, the pupils perceive the task to mean -follow each other at the same speed in a circle around the gymnasium- the teacher behavior should be classified as a command directive 3.

4. The ability of the students: The level of development of the students may impose further restrictions on the number of choices available to the students. For example: "Can you jump from different parts of your body?" For

Grade 1 only flight from one or two feet may be possible, whereas for Grade 6 flight from one or two feet, one or two hands, hands and head, etc. may be possible.

The observers should beware of terminology that seems to be open and free but in fact is restricting or authoritarian. For example: "Travel around the gym on one part of the body!" probably only leaves hopping as the means of travel.

A teacher may restrict the freedom of the pupils by giving a demonstration. For example: "Run, jump and land -- like this." (Teacher demonstration). The pupils all copy the teacher's demonstration.

The specific categories are described as follows:

Category 3. Command, Authoritarian Directive

Complete control over the pupils' response is exercised by the teacher. The directive is phrased in such a way that only one response is possible.

Example:

Stand-up!

Show a handstand!

Category 4. Limiting or Restricting Directive

The teacher limits the pupils by still exercising some degree of control. In order to be classified as a

limiting directive the task must (a) leave up to two of the aspects of movement uncontrolled and (b) more than one response must be possible.

Example:

Show a balance on your hands and feet.
(Action) (Body Part)

The action and body parts are restricted but the level and shape of the body are left free to the child's imagination. More than one response is possible.

Category 5. Open or Free Directive

If (a) three or more aspects of movement are left uncontrolled the teacher behavior is classified as open or free (b) many responses are possible.

Category 6. Teacher Questioning

The teacher asks a question about content or procedure with the intent that one or more students answer with either a verbal or physical activity response.

Examples:

"Is it better to stop with your feet together or apart?"

"Which foot should you have forward when throwing a ball?"

"Who can explain the difference between John's and Mary's dances?"

"Can you run and jump this rope?"

"Can you show four balances?"

"Who can climb the bench?"

PUPIL RESPONSE

This section contains responses by the students. It is subdivided into three categories. Category 7 is pupils' verbal responses, category 8 pupils' physical education activity responses and category 9 any initiating actions by a pupil(s).

Category 7. Pupils' Verbal Response

Any time one or more pupils answer a teacher question verbally the response is classified under this category. The category also includes a physical response which is a substitute for a verbal answer. For example, nodding the head is a substitute for "Yes", shaking the head is a substitute for "No". These would fall under this category rather than the following category which is reserved for physical education type of activity only. If the response is designed to take the place of words, e.g. a gesture or action accompanying or substituting for a verbal response, a verbal response category 7 should be recorded.

Examples:

Question: "Is it easier to stop with your feet together or with your feet apart?"

Answer: "Feet apart."

Question: "Why do you think this is so?"

Answer: "Because the base is bigger with your feet apart."

Category 8. Pupil Activity Response

Whenever a pupil responds to a teacher directive or teacher question with physical activity then the response should be recorded under this category. This should be a specific activity response rather than a gesture accompanying a verbal response or a gesture replacing a verbal answer. For example, shaking the head instead of saying "No" should not be classified under this category. It would be classified under the previous category.

Examples:

Locomotive activities

Balancing activities

Curling, stretching

Work on or with apparatus

Twisting, turning

Throwing

Catching

Information as to the appropriateness of the response (at least as perceived by the teacher-pupil) may be explored by examining the types of teacher reactions which follow the pupil responses.

Category 9. Pupil Initiating Action

If a pupil, of his own volition, initiates interaction with the teacher, the pupil behavior is classified as category 9. Although this pupil action may be an indirect response to the environment it must not be a direct response to any teacher behavior. Such response behavior is categorized 7 or 8.

Examples:

1 (a) The pupils are running. One pupil asks, "How can I change direction suddenly?" (Category 9).

(b) If, however, the children are working on stopping and starting and a pupil asks, "How can I stop more quickly?" this is a response to the teacher solicitation and should be categorized 7. Pupils' verbal response.

2 (a) The pupils are working on a task and a pupil(s) does something not connected specifically to the task but the teacher accepts the action and uses it to develop

the next task.

(b) If the teacher uses an action to develop the lesson but the action was a response and therefore related to the previous task. The pupils' action should be classified as category 8 and the following teacher behavior classified under one of the teacher reaction categories.

TEACHER REACTING BEHAVIOR

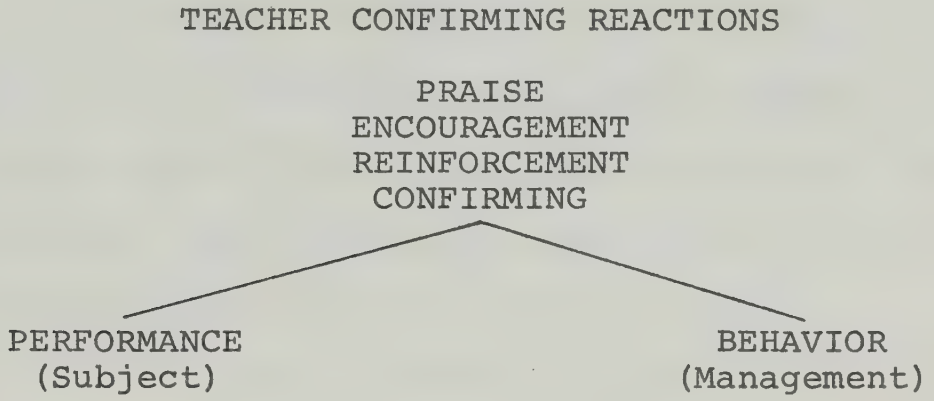
Teacher reactions to the responses are categorized in this section. This type of teacher behavior is often referred to as "coaching" in physical education (Bilbrough and Jones).

Reactions by the teacher are subdivided into the following areas: teacher confirming reactions; teacher correcting reactions; teacher extending and focussing reactions; and finally demonstration.

Teacher Confirming Reactions

Teacher behavior which accepts, praises, reinforces, confirms or in any other way indicates that the pupils' or pupil's response is acceptable should be coded under one of these two categories. Further useful information could

be obtained by dividing the teacher's confirming reactions into performance (or subject) confirming reactions and behavior (or management) confirming reactions.



Short responses such as "Good!", "Yes!", "O.K.", "Uh, Uh!" should be recorded as teacher confirming reactions.

Category 10. Teacher Confirming Performance Reactions

Performance is subject (physical education) based on activity which is executing or carrying out the task (solicitation) set by the teacher.

Examples:

Response: A pupil performing a handspring.

Reaction: "Well done, John."

Response: A pupil playing a game makes a good pass.

Reaction: "Atta boy, Jim."

"Good, Mary, I like the way you stretched your leg in the balance! Your toes are pointed very nicely, good!"

Category 11. Teacher Confirming Behavior Reactions

Behavior refers to the general deportment, propriety, manner of the pupils as well as the way they treat others.

Although category 11 does not seem to occur very often in the observed lessons it is considered worthy of consideration from a theoretical standpoint and as a technique which should be encouraged. Traditionally discipline in schools has been corrective. In the light of Skinner's work in "operant conditioning" and "shaping" unwanted responses should be ignored and desirable responses (behavior) praised and confirmed. This positive response to good behavior may be more beneficial than the more common corrective behavior responses.

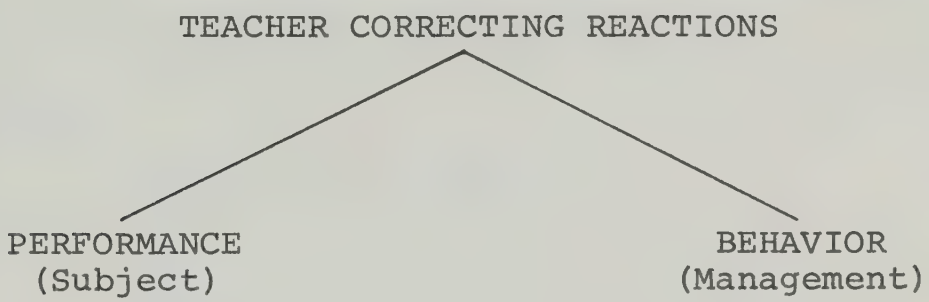
Example:

> A boy who had been interfering with other children, calling out and making a noise, while the teacher is carrying out structuring behavior, starts to sit quietly and listen. The teacher confirms this -- "Good boy, James!" Category 11.

Teacher Correcting Reactions

Reactions by the teacher which indicate to the pupil that his response or lack of response is unacceptable should be recorded under these categories. Useful infor-

mation with respect to the time spent correcting the activities (performance) of the children as compared to time spent in management (correcting behavior) may be obtained.



Category 12. Teacher Correcting (Rejecting) Performance Reactions

The teacher is indicating to the pupil or pupils that their response(s) to the task (solicitation) is/are not acceptable. This category should be used when the reaction implies criticism or rejection of the response.

Example:

A teacher may correct performance in a positive way by focussing the pupils' attention on a particular aspect of the response or by attempting to extend (add to) the pupils' response. These aspects should be classified under categories 14 and 15 and not under category 12.

"Children! That's not right! I asked you to balance on two parts and most of you are balancing

on three parts!"

"Mary! You can jump better than that!"

Category 13. Teacher Correcting Behavior Reaction

The teacher is correcting the general deportment of the class or of a particular pupil.

Example:

"Class! Pay attention!"

"You are making too much noise!"

"John! I am disappointed with you!"

Teacher Extending and Focussing Reactions

A reaction by the teacher with the intention of helping the pupil(s) to improve, clarify, modify, or add to his (their) response(s) falls under one of these categories.

General "shaping" reactions by the teacher may be subdivided into:

a) reactions that are intended to extend the pupils' performance (i.e. to develop a variety of pupil responses). The development of an initial task or solicitation would be classified as extending.

Example:

Balance on your hands and feet -- SOLICITATION.

While you are balancing on your hands and feet try to put your seat upwards sometimes and at other times put your stomach upwards -- EXTENSION.

Find another way of balancing on your hands and feet. -- EXTENSION.

b) reactions that are intended to focus attention on one particular aspect of the response (i.e. to develop quality (skill) of the performance).

Example:

"Mary, concentrate on stretching your legs." -- FOCUSSING.

These reactions may be:

i) made while the pupils are still and watching and listening to the teacher -- succeeding the response.

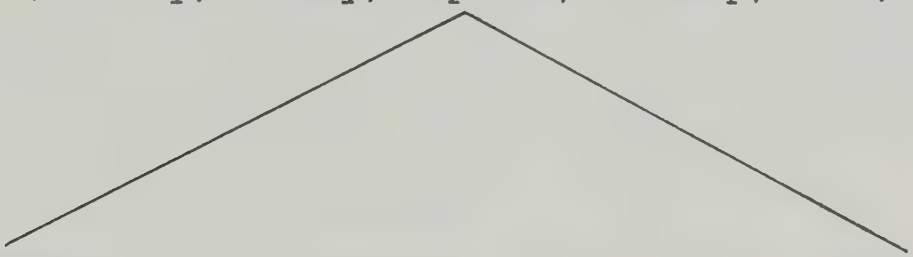
or

ii) general or specific comments which are interjected while the pupils continue working.

Subdividing in this way will give a more accurate record of the actual time that pupils are participating practically.

TEACHER EXTENDING AND FOCUSSING REACTIONS

(Clarify, Modify, Improve, Develop, etc.)



EXTENDING (Variety)

FOCUSSING (Quality)

Category 14. Teacher Extending Reactions

The teacher is attempting to add to, extend, or vary the response(s) of the pupil(s). The category will be used when the teacher talks to the whole class, a group or an individual. The reaction follows the pupils' response. The teacher may react to the pupils while they are working or after having stopped the activity.

Example:

Reaction: "You have been travelling on your feet. Now sometimes use just one foot and sometimes two feet."

"Sometimes travel forwards, sometimes backwards: sometimes high, sometimes low."

Category 15. Teacher Focussing Reactions

After the pupils' response, the teacher focusses the children's attention on any one particular aspect.

The teacher is trying to develop the quality (skill) of the performance (response).

Example:

Reaction: "As you are jumping, try to land very softly."

"Stretch those toes!"

"Keep your head up!"

Category 16. Demonstration

If the teacher, a child or a group of children perform an activity for the rest of the class this should be classified as a demonstration. The performance may have the purpose of illustrating, clarifying, extending, or of focussing on particular aspects of the task (Solicitation) or of the response(s).

The area of demonstration is of importance in the physical education lesson. In this study it is considered necessary to group all types and purposes of demonstration under one category. If specific information as to the use, type, and purpose of demonstration is required, further subscripting would be necessary.

OTHER

Category 17. Silence or Confusion

The silence or confusion category should be recorded

when there is silence except when the pupils are responding actively. It should also be recorded if there is so much unproductive activity going on that it is impossible to analyze the interaction.

Caution: Physical activity usually causes some noise. This should not be categorized as confusion unless it is unproductive.

DISCUSSION OF CLASSIFYING BEHAVIORS

Category 1 v Categories 3, 4, 5

If the teacher talk solicits or is intended to solicit a response from the pupils, a 3, 4 or 5 should be recorded.

Organizing behavior should be classified under this category.

> "This group will get out the climbing apparatus, this group will get out 2 benches and a mat, this group will get the springboard and a mat ..... As soon as you have your apparatus explore the different shapes that you can make on or from the apparatus."
>
> "Stop! Stand by your apparatus! Group no. 1 will move to group no. 2.... Go to your next group place and stand by the apparatus. Group no. 5.

Where should you have moved to? ..... That's right, the pylons and canes. .... Now you are all at the right places, carry on working."

Categories 3, 4, 5 v Categories 14, 15

A category 3, 4 or 5 should be used for each new solicitation. If the behavior of the teacher is an extension or development of the previous statements it should be recorded as either 14 or 15. See examples under Teacher Extending Focussing Reactions.

Category 1 v Categories 12, 14, 15

If the teacher is talking in general terms about episodes occurring in the lesson, a 1 should be recorded. If, however, the teacher is reacting to the children's response and is referring to specific aspects of the response, a 12, 14 or 15 should be recorded. In order to be classified as a 12, 14 or 15, the teacher's remarks should stimulate the pupils to better or more varied performance. If there is doubt a 12, 14 or 15 should be recorded.

Categories 7, 8 v Category 9

In order for a pupil's actions to be recorded as category 9 the observer should be sure that the action is independent of the teacher's solicitation. It may result

from the situation or environment.

It is possible that the more freedom that pupils have the more likely they are to imitate interaction. Use of the instrument should indicate the truth of this statement.

If there is doubt either a 7 or 8 should be recorded as these are the most likely responses.

Categories 10, 11 v Categories 12, 13

Although sarcasm may be a poor teaching technique in particular in elementary schools, many teachers still use it. The observers should, therefore, be aware of the use of sarcasm and record the appropriate category.

Example:

"Well done!"

In normal usage this would convey approval or praise of the pupil's performance or behavior. But some teachers may use it when a pupil has done something stupid.

It is possible that subtle changes may be identified from the general pattern of the teacher being observed. If a teacher has not used sarcasm in the lesson and one particular piece of behavior is doubtful it should be recorded in accordance with the general pattern, i.e. categories 10 or 11. If, however, a teacher has been using a great deal of sarcasm and one piece of behavior is doubtful it may well be interpreted as criticism.

Category 12 v Category 15

It is difficult to decide whether a teacher's reacting falls into the correcting category (12) or in the focussing category (15). If the reaction appears to be criticising or rejecting, in other words is negative, it should be tabulated as category 12. The rejection may be in the form of the language used or be in more subtle ways such as intonation or facial or other gestures. If the reaction is of a positive nature it will usually be classified as category 15.

Care should be taken by the observers when the teacher uses phrases that through their usage have assumed particular meanings between the teacher and the pupils. For example, "Oh you little beast!" may mean - you behave like an animal or it may mean - you are cuddly and cute.

Category 8 v Category 17

Although there may be a certain amount of noise accompanying physical activity, which may appear confusing, the observer must judge whether this noise is involved noise and that within this environment the pupils are 'working', if so an 8 should be recorded. If, however, the noise is unrelated to the task at hand and is not involved noise a 17 should be recorded.

The way in which the teacher perceives the situation

will become clear from the type of teacher behavior following the situation.

GROUND RULES

Observers should be careful in recording complete changes in teacher behavior and should not record another category unless they are sure that such a change has taken place.

Example:

> A teacher has been using command, authoritarian directives for most of the lesson and suddenly seems to use a limiting, restricting directive. The observer should be sure that this change has taken place and is not a different form of phraseology. If there is still doubt the category indication is the dominant pattern of teacher behavior.

ASSIGNMENT FOUR

The following are scripts from elementary school physical education lessons.

1. Divide the scripts into behavioral sections, i.e. make a "/" at each change of behavior.
2. Categorize each behavioral section by writing the category number in the vertical list.

TRANSCRIPT 1

TEACHER: Hello children. How are you this morning? Before we start I would like to remind you that tomorrow your parents can come to school. Please remind them. Run and stop on the signal. Go!

CHILDREN: (Activity response) (running)

TEACHER: Stop! --pause-- Go!

CHILDREN: (Activity response)

TEACHER: Stop! Go!

CHILDREN: (Activity response)

TEACHER: Stop! Show changes in direction this time.

CHILDREN: (Activity response)

TEACHER: Good, well done!

CHILDREN: (Activity response)

TEACHER: Try to run more quietly!

CHILDREN: (Activity response)

TEACHER: Stop! Find a partner. --pause-- One of you put up your hand. --pause-- You are number 1 the

other is number 2. Number 1 chase number 2. Go!

CHILDREN: (Activity response)

TEACHER: Use changes of direction and stops and starts. Stop! Get a ball and throw and catch the ball in two's!

CHILDREN: (Activity response)

TEACHER: Stop! Look this way. Throw and catch the ball while you are moving.

CHILDREN: (Activity response)

TEACHER: Keep your eyes open. Watch for other people. Try to throw the ball in front of your partner.

CHILDREN: (Activity response)

TEACHER: That's better. You are not dropping the ball as much now.

CHILDREN: (Activity response)

TEACHER: Stop - pay attention. In a football game if the quarterback is going to pass the ball to a pass receiver he must pass in front. If he passes at him by the time the ball has gone through the air the catcher has moved. Can you use your feet to pass the ball?

CHILDREN: (Activity response)

TEACHER: Don't kick the ball too hard because your partner will not be able to control the ball.

CHILDREN: (Activity response)

TEACHER: What part of your foot is best to pass with? --pause-- John?

JOHN: --pause-- I think that I find the side best. I have more control with the side.

TEACHER: Very good John! As you pass the ball, children, use the side of your foot.

CHILDREN: (Activity response)

TEACHER: Remember you have two feet. Sometimes use your left foot and sometimes use your right foot.

CHILDREN: (Activity response)

TEACHER: Keep your feet moving so that you can adjust your position more easily.

CHILDREN: (Activity response)

TEACHER: Today we are going to play a passing game. Get into your groups of six. --pause--

CHILDREN: (Getting into groups of six - noisily)

TEACHER: Stop! You can get into groups much more quietly!! Carry on.

CHILDREN: (Get into groups)

TEACHER: Red team will play against Blue and Yellow team will play against the Green team. In order to score a point one team must pass the ball to one of his team who has run over the end zone. Do you all understand?

CHILDREN: Yes!

TEACHER: Carry on.

CHILDREN: (Activity response)

TEACHER: Spread out. Look for people on your own side. Make those passes accurate! Check your opponents. Don't give them too much room.

TEACHER: Put the balls away. Run in different directions.

CHILDREN: (Putting the balls away then running)

TEACHER: Line up by the door.

TRANSCRIPT 2

TEACHER: Good morning class. This morning we are going to work on different ways of transferring weight. Run around the gym.

CHILDREN: (Activity response) (Running in a circle)

TEACHER: Stop! What can you say about the direction of your running? Yes John.

JOHN: We are all running in a circle.

TEACHER: That's right! Is that the only direction that we can run? (Teacher points to child).

CHILD: No! We can run all over the space.

TEACHER: Yes. Run all over the gym floor. Take up all the space.

CHILDREN: (Activity response) (Run all over gym floor)

TEACHER: Stop and look this way! You are still leaving big spaces and following each other. Spread out, keep away from everyone. Go!

CHILDREN: (Activity response)

TEACHER: That's much better, you are filling up all the space - good. Can you find other ways of travelling on your feet?

CHILDREN: (Activity response)

TEACHER: Good Vonne, that's it. See if you can find different ways of travelling.

CHILDREN: (Activity response)

TEACHER: Stop! Let's watch Stephen and Christine!

CHILDREN: (Demonstrate)

TEACHER: What do you notice about Stephen's feet and Christine's feet? Yes Mary.

MARY: They are both very quiet.

TEACHER: Yes that's good. Can you think of anything else? --pause-- Mark?

MARK: --pause-- Stephen is using one foot and Christine two feet.

TEACHER: Yes, Mark, you were watching carefully. As you are travelling this time sometimes use one foot and sometimes two feet.

CHILDREN: (Activity response)

TEACHER: Well done you are working well this morning. Stop. Jump on the spot!

CHILDREN: (Activity response)(Jumping on the spot)

TEACHER: Up a little higher! Land more quietly. Jim, you are landing heavily, bend your ankles as you land. Stop! Close your eyes and jump. Can you hear anything?

CHILDREN: (Activity response)
Oh yes.

TEACHER: Jump once and land softly. James, I said once!! Please pay attention and listen!!

CHILDREN: (Activity response) --pause--

TEACHER: Curl up small.

CHILDREN: (Activity response) (in all different positions)

TEACHER: What part of you is touching the ground? --pause-- Change it to a different part!

CHILDREN: (Activity response)

TEACHER: What sort of things roll best? --pause-- Pay attention!!

CHILD: A ball.

TEACHER: A football or a soccer ball?

CHILD: Soccer ball.

TEACHER: (Demonstrates roll) When you roll try to tuck everything in.

CHILDREN: (Activity response) (Rolling)

TEACHER: Look this way! If you tuck parts in you will not hurt yourself. It is surprising how easy it is if you practice. Put your hands on the ground and kick your feet up in the air!

CHILDREN: (Activity response)

TEACHER: Good, Pat, that was very nice. Keep your chin up and make your hands strong.

CHILDREN: (Activity response)

TEACHER: Can you bring your feet down in a different place?

CHILDREN: (Activity response)

TEACHER: That's good! Stop! Take a hoop and carry on working.

CHILDREN: (Very noisy getting hoops, some children playing)

TEACHER: Stop! This just will not do. You are making too much noise. There is no need for it. Put your hoop away!

CHILDREN: (Put hoops away)

TEACHER: Now get your hoop quietly and carry on working.

CHILDREN: (Get hoops out)

TEACHER: Much better! I liked that! Put your hoop on the ground and move into it and out of it using your feet.

CHILDREN: (Activity response)

TEACHER: Good Jean! Let's look at Jean.

JEAN: (Demonstrates)

TEACHER: How could she improve?

CHILD: By stretching her feet.

TEACHER: Yes! See if you can show as many ways as Jean did!

CHILDREN: (Activity response)

TEACHER: Put your hands in the hoop, kick your feet up in the air and bring them down somewhere else.

CHILDREN: (Activity response)

TEACHER: Come down softly. Stretch your legs a little more! Keep working James!! Look this way!

CHILDREN: (Stop working) --pause--

TEACHER: Make some bridge-like shapes over your hoop.

CHILDREN: --pause-- (Activity response)

TEACHER: Sometimes seat up. Sometimes tummy up. Sometimes side up. Rest for a moment. --pause-- Choose your favorite bridge-like shape and practice it to make it as good as you can.

CHILDREN: (Activity response) (Bridge shapes)

TEACHER: Well done, there are some good bridges. I like them. Put your hoops away and line up by the door. Thank you boys and girls. Today we worked on rolls, travelling and balancing.

ASSIGNMENT FIVE

Live observation. If you are confident in your classification so far you are ready for live observation in the gymnasium. Begin by getting the tape-recorder set

up and yourself comfortably placed in a position from which you can see the whole gym. Watch part of the lesson without recording the categories. Use this time to get a feel of what is going on and be particularly careful of nonverbal communication. This is one part of the lesson you have not worked on thus far. After ten minutes record categories. Don't be concerned if you miss categories but make a note on the tape so that after the observation session you can correct errors and iron out any problems in classification. Do this immediately after the lesson while things are fresh in your mind. When you are fully confident, after analyzing 4 or 5 lessons, you should test yourself against a trained observer. If you record a Scott's coefficient of over .80 you are ready to observe.

A P P E N D I X G

EXAMPLE OF CATEGORIES

RECORDED FROM TAPE

TEACHER: No. 7 LESSON: No. 2

OBSERVERS: C and A SUBJECT: Games

C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
8	8	8	8	3	3	6	6	7	7	7	7	7	7	7	7	8	8	16	16
1	3	3	3	8	8	7	7	15	15		10	16	16	3	3	12	12	15	15
8	8	8	8	1	1	15	15		3	3	3	3	3	16	16	15	15	15	15
3	3	16	16	1	1	15		8	8	8	8	8	8	10	10	8	8	16	16
8	8	3	3	15	15	10		16	16	1	1	8	8	15	15	15		14	14
15		8	8	3	3	3	3	15	15	10	10	15		1	1	16	16	8	8
8	8	16	16	8	8	8	8	8	8	15	15	8	8	3	3	10	12	8	8
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8	8	8	8	8	8	15	15	15	15	8	8	15	15	13	13	15	15	8	8
15	15	16	16	15	15	3	3	10	10	3	1	8	8	3	3	15	15	15	15
3	3	15	15	8	8	8	8	10	10	8	8	8	8	3	3	10	10	15	
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8	8	1	1	3	3	15	15	16	16	15	15	7	7	4	4	16	16	3	3
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